

... of the hand of hearing child...

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THESIS

"A Study of the Hard of Hearing Child
with some Provisions for Meeting his Needs
in the School Program."

submitted by

Mira Wallace
B. S. in Ed., Boston University, 1933

In partial fulfillment of the requirement for
the degree of Master of Education.

1938

First Reader	Guy M. Wilson, Professor of Education
Second Reader	Mabel C. Bragg, Associate Professor of Education
Third Reader	Edgar W. Everts, Associate Professor of Physical Education

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Seally, Agatha. "Three Million Children in our Schools who are Hard of Hearing, Bygone, March, 1935, pp. 268-9.

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Part I

Introduction

The hard of hearing child must be recognized in our public schools. The need for this is shown in the statement in the Journal of the American Medical Association that there are three million children in our schools who are partially deaf or hard of hearing.¹ This represents about one out of eight having measurable defects. Of this number a large per cent will be deaf in later years, but our hope lies in the finding of mild and potentially remedial cases in their incipency, placing them under medical care before they have become chronic. Herbert Hoover reminded us that we must not leave one handicapped child uncared for.

A slight loss of hearing is a handicap. The White House Conference on Child Health and Protection suggests in "Our Debt to Handicapped Children" that the handicapped child has a right:

1. "To as vigorous a body as human skill can give him.
2. To an education so adapted to his handicap that he can be economically independent and have the chance for the fullest life of which he is capable.
3. To be brought up and educated by those who understand the nature of the burden he has to bear and who consider it a privilege to help him bear it.

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4. To grow up in a world which does not set him apart, which looks to him, not with scorn or pity or ridicule, but which welcomes him, exactly as it welcomes every child, which offers him identical privileges and identical responsibilities.

5. To a life on which his handicap casts no shadow, but which in full, day by day, with those things which make it worth while, with comradeship, love, work, play, laughter, and tears--a life in which these things bring constantly increasing growth, richness, release of energies, joy in achievement."

In making the test the examiner should stand behind the child and hold in one hand a card of postal-card size or larger such as may have been used to cover one eye in the eye test, at the side of the head of the child as a "blinder" to keep him from seeing the watch. The examiner should hold the watch in the other hand with the palm toward the ear and on a level with it. It should be held at first about a foot from the ear, and, if heard, then carried about a foot farther; then another foot, and so on.

As all of us are given to 'hearing things' we are asked to hear, or suppose we should hear, and children are especially prone to wish to please the teacher by responding "yes" when

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Part II

A. Testing Methods

Since deafness is not visible and our testing methods may be inadequate it is necessary to understand all signs and symptoms of the hard of hearing child. Either the watch test or the voice test is used in many schools today. The so-called watch test and voice test are described by Dr. James Frederick Rogers in "What Every Teacher Should Know about the Physical Condition of her Pupils" as follows:

The Watch Test--"For the purpose of examination a loud-ticking watch is best. It should be used in a quiet room and should be heard at a distance of at least four feet by the average ear. No other watch than the one to be used for the test should be in the vicinity of the examiner and pupil.

In making the test the examiner should stand behind the child and hold in one hand a card of postal-card size or larger, such as may have been used to cover one eye in the eye test, at the side of the head of the child as a "blinder" to keep him from seeing the watch. The examiner should hold the watch in the other hand with the palm toward the ear and on a level with it. It should be held at first about a foot from the ear, and, if heard, then carried about a foot farther; then another foot, and so on.

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As all of us are given to 'hearing things' we are asked to hear, or suppose we should hear, and children are especially prone to wish to please the teacher by responding "yes" when

asked if they hear the watch, it is best in order to make sure that it is heard, occasionally to carry the watch away at arm's length and turn the palm of the hand away from the ear. The distance and the muffling produced by bringing the hand between the ear and the watch will make it inaudible.

If, when questioned, the child answers promptly that he hears when the watch is held at arm's length and with the palm turned away from him, one may be pretty sure that he does not hear but either misunderstands what is wanted of him or is too desirous of pleasing the examiner. Another explanation and trial should be made.

The watch should always be held at about the level of the head of the child and carried directly sideward from the ear. The card in the other hand should be held so that he does not see the watch or the movement of the examiner's arm and hand.

The hearing for each ear can be recorded by using as a denominator the longest distance at which most children hear the watch and, as a numerator, the longest distance at which it is heard by the individual child.

The Voice Test--The pupil is placed twenty feet away from and with his back to the examiner to prevent his watching the movements of the examiner's lips. He is instructed to repeat the words or numbers he hears. He is then told to cover the left ear with his hand and the examiner pronounces disconnected numbers (as 247, 819), words, or short sentences in a conversational voice.

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The other ear should then be tested. If the child does not hear what is said the examiner should move nearer--to fifteen, ten, or five feet, if need be--and repeat the test. If most of the children hear readily at twenty feet, that distance may be used as a denominator and the distance at which the voice is heard distinctly by the individual will serve as the numerator of a fraction which represents roughly the hearing acuity of the child.

A child who cannot hear with either ear the voice or watch at more than one-third the usual distance may be in need of special training in lip-reading. However, every child who is defective in either ear should have an examination by a specialist to determine whether his hearing can be improved, or prevented from growing worse. The cause of the impaired hearing may be nothing more than an accumulation of wax.

It may be well to remember that a few children have an acuity of hearing above the average and the same is true with regard to the sense of sight."

When the watch method is used there are several reasons why it may not be a true test of hearing. Dr. Rogers in describing the test recommends the use of a loud-ticking watch. How can one determine what is a "loud-ticking watch?" The usual watch is not standardized. This can be overcome by purchasing a Sperry Hearing Tester.¹

¹Sperry, Fred N., New Haven, Connecticut, "Sperry Hearing Tester."

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If the child is allowed to face the class, other children may signal to him when to say he can hear.

When the whisper method is used, the teacher is not able to standardize her whisper. Thus it can not be the same for each child, nor the same for the same child on different occasions. With a different teacher testing the child each year, there is bound to be added difficulty in standardization.

The 4-A Audiometer Test--With the realization that these methods were inadequate, and that it was difficult to detect slight defects, the American Federation of Leagues for the Hard of Hearing appealed to the Bell Telephone Laboratories to develop a better and cheaper method of testing.¹ The Western Electric 4-A audiometer was placed on the market in 1927. Today we have a more compact machine in the 4-B audiometer.

It seemed advisable to develop a machine that could test large groups at one time and also test the ability to recognize the spoken word. The 4-A audiometer tests one ear at a time by means of an electric phonograph, which reproduces speech sounds through a telephone receiver. In testing children below the fourth grade the time consumption is a little greater, but in the fourth grade and above, forty children can be tested in about fifteen minutes.

The records used are so arranged that the intensity of sound transmitted to the listener's ear decreases in small steps to a minimum, returns abruptly to the maximum and de-

¹Royce, K. P., "Finding the Hard of Hearing Child," p. 1.

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creases again. This happens four times. The first two series of numbers are spoken in a woman's voice and the next two in a man's voice. Each series consists of different numbers. Each ear is tested four times. The results are recorded on specially prepared data sheets. The hearing loss is indicated on this sheet.

"The usual method of describing a noise is to compare it with some other noise; it may be loud in comparison or it may be soft. If expressed numerically, it would involve a ratio.¹ The loudness of a noise increases in proportion to the logarithm of the ratio of two intensities.

Let us illustrate this from an actual situation. If two drops of rain fall on a roof, there is a definite sound and a definite intensity. If twenty drops fall on a roof the intensity is increased by ten times. If two hundred drops fall, the original intensity is increased by one hundred times. But the loudness increases only as the logarithm of the ratio of the intensities. When twenty drops fall, the ratio of the increase in intensity is 20:2, or 10. The logarithm of ten is one. The difference between two sounds, in decibels, is ten times the logarithm of the ratio of the intensities, by definition. The difference, then, between the sound produced by two raindrops and that produced by twenty raindrops is ten decibels. When two hundred raindrops fall, the ratio of the intensities is 200:2, or 100. The logarithm of one hundred is

¹Madden, Richard, "The School Status of the Hard of Hearing Child," p. 16.

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two, so the increase in loudness expressed in decibels is ten times two, or twenty. The noise produced by twenty raindrops is ten decibels louder than the noise produced by two raindrops; and by two hundred raindrops, twenty decibels louder. If we desire to know the difference in loudness between a noise which is just audible in a quiet office and a similar one which is just audible on a busy street, we find the ratio of the intensities which is required to produce them. Ten times the logarithm of this ratio will be the amount of difference between the two sounds, expressed in decibels. The loudness of any sound, in decibels, may be expressed by the following formula:

$$\text{Loudness in decibels} = \frac{\text{Intensity of the sound measured}}{\text{Threshold intensity of that sound}}$$

The amount of "hearing loss" is determined by this principle. Suppose a normal person can just hear the noise produced by fifty raindrops and a second person can not hear the sound until it is produced by five hundred raindrops. The ratio of the intensities is ten to one. The logarithm of ten is one; so the auditory deficiency of the second person requires the loudness of the sound to be ten decibels greater for audibility than the hearing of the first person requires. When used in this manner the decibel is generally called a sensation unit; so the loss of hearing of the second person is ten sensation units. Hearing loss may be expressed in sensation units for any instrument by the following formula:

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Necessary intensity of the sound to be audible to the subject being tested

$$H. L. = 10 \log$$

Threshold intensity of the sound for subjects with normal hearing.

For the purpose of testing hearing, the intensity of a sound at the threshold of hearing, i.e., just audible, has been determined for a great number of people with normal hearing. The intensity of the sound is increased until it reaches the threshold of hearing for the person being tested. This difference is then converted into hearing loss in terms of sensation units in the manner described above. The sensation unit can be used to express hearing loss for any kind of measure of hearing, whether raindrops, watch-ticks, coin-clicks, tuning forks, audiometers, or the human voice, because it is merely a ratio between two similar sounds. The great difficulty involved is the accurate determination of the intensity produced during the test and of the intensity necessary for audibility by the normal ear. It is impossible to control to a satisfactory degree the intensity of the voice when testing. For accurate watch-tick tests it is necessary to standardize each individual watch. Herein lies the value of the audiometer. The threshold of normal audibility is standardized, the changes in intensity are constant, and the auditory loss is read directly in sensation units.

The sensation unit will always mean the same for any particular type of instrument, if the threshold for hearing has been carefully obtained and if the variations in intensity have

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been accurately controlled. The sensation unit on one instrument does not necessarily mean the same as a sensation unit on a different type of instrument, for the two types are not calibrated. We could show mathematically that a child with a loss of 9 S. U. can just hear a sound at thirty inches, produced by the particular instrument being used, which can be heard at ten and one-half inches by a child who is normal in hearing. Substitution in the formula for hearing loss gives

$$(30)^2$$

H. L. = $10 \log \frac{(30)^2}{(10.5)^2}$ since the intensity of a sound varies inversely as the square of the distance from its source. The solution of this equation indicates an auditory loss of 9 S. U. But this is of little practical use. Even the deaf have some residual hearing, so that their loss of hearing could be expressed mathematically in terms of distance.

The criterion for auditory deficiency must be of a social nature. It is probably more evident why the otologist may draw the danger line at 9 S. U. and the educator at some other point. The research of the former may indicate that many children with a loss of 9 S. U. are progressively deaf. Even if relatively few of these are progressively deaf, the otologist is justified in demanding that all children be examined and, when found to be in danger, given remedial treatment of a medical nature, or compensatory treatment, such as lip-reading. The research of the educator may reveal a different point at which educational achievement begins to suffer on this account, and another point

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where the child's social adjustment becomes difficult because of impaired social communication."

When given an audiometer test, children with a hearing loss of nine or more sensation units in either ear should be retested.¹ Many make mistakes the first time due to inattention, nervousness, noise in the room, or other causes. After the third test, those who have a hearing loss of nine or more sensation units in one or both ears should be referred to their own family physician or to an ear specialist or to a clinic for diagnosis by other methods. The 3-A and the 2-A audiometer are often used for these tests. The City of Newton reports: "A recent check with a tone-range (2-A) audiometer loaned us by the American Society for the Hard of Hearing indicated that the 4-A instrument detects nearly all of the cases of incipient deafness, though the actual hearing loss may be greater than is indicated by the 4-A tests.² Of the 305 tested with the 2-A, 176 showed a loss considerably greater than that shown by the 4-A, 117 approximately the same loss, and 12 showed less. With few exceptions those pupils who are detected by the 4-A as having defective hearing and who had examinations by an ear specialist have been found to have some form of ear trouble."

The prognosis is good in about fifty to eighty-five per cent of the cases. Leading otologists tell us that our hope of preventive deafness in adults lies in early diagnosis.

¹American Society for the Hard of Hearing, "Group Hearing Test," p. 5.

²Macnutt, Ena G., "What Newton is Doing for the Hard of Hearing Children," p. 2.

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²Macnuff, Mrs. G., "What Newton is Doing for the Hard of Hearing Children," p. 5.

B. Results of the Audiometer Tests

The results of the audiometer tests given by the Division of Child Hygiene, of the Department of Public Health of Massachusetts, from January 1, 1937, through December 31, 1937, are as follows:

	<u>No. Towns</u>	<u>No. Children</u>
"Number tested" ¹	105	40,462
Number retested	100	8,159
Number children needing attention	100	2,165

This shows that from 100 towns for which there were complete figures on the retesting, 21% of the children were retested, and 5% of the number tested need further attention."

In a report of the American Society for the Hard of Hearing Committee on Hard of Hearing Children for the School Year 1936-37, 137 Massachusetts towns reported testing 160,398 children, 7,659 had impaired hearing, 2,986 had a medical examination, 290 were restored to normal hearing, 459 were improved and 1069 received lip-reading.¹

This does not represent all of the towns giving tests; it merely indicated the number that reported on a questionnaire sent out by the committee mentioned above.

(1) Elementary School Tests

In an industrial community during the school year 1936-1937, 12,073 children in the public schools, grades three through

¹American Society for the Hard of Hearing, Reprint No. 110.

B. Results of the Audiometer Tests

The results of the audiometer tests given by the Division of Child Hygiene, of the Department of Public Health of Massachusetts, from January 1, 1937, through December 31, 1937, are as follows:

<u>No. Children</u>	<u>No. Towns</u>	
40,482	105	"Number tested"
8,182	100	Number retested
2,182	100	Number children needing attention

This shows that from 100 towns for which there were complete figures on the retesting, 31% of the children were retested, and 5% of the number tested need further attention."

In a report of the American Society for the Hard of Hearing Committee on Hard of Hearing Children for the School Year 1936-37, 137 Massachusetts towns reported testing 160,398 children. 7,659 had impaired hearing. 2,986 had a medical examination, 290 were restored to normal hearing, 459 were improved and 1069 received lip-reading."

This does not represent all of the towns giving tests; it merely indicated the number that reported on a questionnaire sent out by the committee mentioned above.

(1) Elementary School Tests

In an industrial community during the school year 1935-1937 12,073 children in the public schools, grades three through American Society for the Hard of Hearing, Report No. 110.

twelve were given hearing tests with the 4-A audiometer.

The first test which was given in September, 1936, included 1,160 third grade children of which 354 were found defective, which means that each had a hearing loss of 9 or more sensation units in one or both ears. On the second test 350 were tested with 134 found to be defective. This test was given in October. In May, 1937, 126 of these children were retested and 39 were found to be defective. In other words, of the 1,160 originally tested, 42 children were finally classified as hard of hearing.

Grades four included 1,159 children tested with 348 found defective on the first test. Of these 340 were retested and 136 were found defective, but of the 123 who were given the final test 44 were classified as hard of hearing.

Grades five included 998 children who were given the first test with 249 defective. 245 were retested and 84 were found defective. Of the 83 given the final test 33 were classified as hard of hearing.

Grades six included 1,032 children who were given the first test with 247 defective. 241 were retested and 73 were found defective. Of the 63 given the final test 29 were classified as hard of hearing.

Grades three through six included a total of 4,349 children tested with the 4-A audiometer with 148 classified as hard of hearing. Table 1 shows the results of the 148 hard of hearing children. Tables 1, 2, 3, and 4 indicate only those children

children. Tables 1, 2, 3, and 4 indicate only those children hearing. Table 1 shows the results of the 148 hard of hearing tested with the 4-A audiometer with 148 classified as hard of hearing. Grades three through six included a total of 4,348 children as hard of hearing. Of the 83 given the final test 29 were classified defective. Of the 83 given the final test 25 were classified test with 247 defective. 241 were retested and 73 were found Grades six included 1,032 children who were given the first as hard of hearing. Of the 83 given the final test 25 were classified defective. Of the 83 given the final test 25 were classified test with 249 defective. 245 were retested and 84 were found Grades five included 928 children who were given the first final test 44 were classified as hard of hearing. 136 were found defective, but of the 123 who were given the defective on the first test. Of these 249 were retested and Grades four included 1,159 children tested with 348 found of hearing. Originally tested, 43 children were finally classified as hard and 39 were found to be defective. In other words, of the 1,160 in October. In May, 1937, 128 of these children were retested were tested with 134 found to be defective. This test was given sensation units in one or both ears. On the second test 350 included 1,160 third grade children of which 354 were found defective. The first test which was given in September, 1936, included 126 were given hearing tests with the 4-A audiometer.

who were classified as hard of hearing, that is, they had a sensation unit loss of nine or more units in one or both ears.

The first column indicates the pupil or the case number. The second column marked 1 shows the results of the right (R~~/~~) ear and the left (L~~/~~) ear. The column marked 2 indicates the score in the second test. The column marked 3 indicates the score in the third and final test. If no third test was given the score on the second test is considered as the final score.

The median and the average hearing loss can easily be estimated but the matter for consideration is an individual and not an average condition.

Table 1. Shows the results of a hearing test given with the 4-A audiometer to the 148 elementary school pupils, grade 1 through 6 who had a hearing loss of nine or more sensation units in one ear or both ears.

Case Number	Test Number					
	1.		2.		3.	
	R /	L /	R /	L /	R /	L /
1.	18	3	21	6	15	3
2.	18	6	21	3	12	0
3.	30	30	30	27	30	15
4.	-3	18	3	24	-3	18
5.	-3	30	-3	15	-3	15
6.	30	3	30	3	24	6
7.	30	9	9	3	15	3
8.	12	6	9	6	9	6
9.	6	24	15	24	0	21

who were classified as hard of hearing, that is, they had a sensation unit loss of nine or more units in one or both ears. The first column indicates the pupil or the case number. The second column marked 1 shows the results of the right (R) ear and the left (L) ear. The column marked 2 indicates the score in the second test. The column marked 3 indicates the score in the third and final test. If no third test was given the score on the second test is considered as the final score. The median and the average hearing loss can easily be estimated but the matter for consideration is an individual and not an average condition.

Table 1. Shows the results of a hearing test given with the 4-A audiometer to the 148 elementary school pupils, grade 1 through 6 who had a hearing loss of nine or more sensation units in one ear or both ears.

Case Number	Test Number			
	1. R	1. L	2. R	2. L
1.	18	3	21	15
2.	18	6	21	12
3.	30	30	27	30
4.	-3	18	24	-3
5.	-3	30	-3	15
6.	30	3	30	24
7.	30	9	9	18
8.	18	6	9	9
9.	6	24	18	24

Table 1. (continued) Shows the results of a hearing test given with the 4-A audiometer to the 148 elementary school pupils, grade 1 through 6 who had a hearing loss of nine or more sensation units in one or both ears.

Case Number	Test Number					
	1.		2.		3.	
	R/	L/	R/	L/	R/	L/
10.	21	21	6	12	6	21
11.	9	9	9	6	9	3
12.	9	9	9	6	9	3
13.	6	9	6	12	6	12
14.	21	9	15	0	12	0
15.	3	30	6	27	6	27
16.	12	21	9	21	9	21
17.	6	21	3	27	--	--
18.	-3	30	6	27	-3	24
19.	12	27	12	27	6	24
20.	12	9	9	9	-3	9
21.	9	12	9	12	--	--
22.	3	27	3	30	--	--
23.	24	21	18	9	--	--
24.	12	6	--	--	--	--
25.	0	12	0	15	0	30
26.	9	24	6	15	6	21
27.	12	12	0	12	6	15
28.	9	9	3	9	--	--
29.	21	18	27	24	6	12
30.	15	6	24	3	15	3

Table 1. (continued) Shows the results of a hearing test given with the 4-A audiometer to the 148 elementary school pupils, grades 1 through 6 who had a hearing loss of nine or more decibels in one or both ears.

Case Number	Test Number			
	1.		2.	
	W	L	W	L
10.	21	21	8	12
11.	9	9	9	6
12.	9	9	9	9
13.	6	9	6	12
14.	21	9	12	12
15.	3	30	6	27
16.	12	21	9	21
17.	6	21	3	27
18.	-3	30	6	27
19.	12	27	12	27
20.	12	9	9	-3
21.	9	12	9	12
22.	3	27	3	30
23.	24	21	18	9
24.	12	6	--	--
25.	0	12	0	12
26.	9	24	6	12
27.	12	12	0	12
28.	9	9	3	9
29.	21	18	27	24
30.	12	6	24	12

Table 1. (continued) Shows the results of a hearing test given with the 4-A audiometer to the 148 elementary school pupils, grade 1 through 6 who had a hearing loss of nine or more sensation units in one or both ears.

Case Number	Test Number					
	1.		2.		3.	
	R/	L/	R/	L/	R/	L/
31.	6	9	9	12	12	12
32.	3	21	6	24	3	24
33.	12	9	0	9	12	9
34.	30	6	30	0	30	-3
35.	9	9	3	9	0	9
36.	3	9	3	12	6	9
37.	15	15	18	24	9	12
38.	3	9	6	12	6	9
39.	9	9	12	18	21	12
40.	15	0	9	6	--	--
41.	12	30	3	30	-3	15
42.	3	30	3	30	-3	24
43.	9	9	9	13	--	--
44.	15	15	18	15	9	12
45.	9	0	12	6	12	6
46.	6	9	9	9	--	--
47.	12	3	12	6	15	3
48.	15	18	3	15	--	--
49.	30	30	15	6	--	--
50.	9	6	27	27	15	12
51.	9	21	15	27	12	9

Table I. (continued) Shows the results of a hearing test given with the 4-A audiometer to the 148 elementary school pupils, grade 1 through 8 who had a hearing loss of nine or more sensation units in one or both ears.

Case Number	Test Number			
	1.	2.	3.	4.
31.	8	9	12	12
32.	3	21	6	24
33.	12	9	0	12
34.	30	6	30	30
35.	9	9	3	0
36.	3	9	3	6
37.	12	12	18	9
38.	3	9	6	6
39.	9	9	12	21
40.	12	0	9	--
41.	12	30	3	12
42.	3	30	3	24
43.	9	9	9	--
44.	12	12	18	9
45.	9	0	12	6
46.	6	9	9	--
47.	12	3	12	3
48.	12	12	3	--
49.	30	30	12	--
50.	9	6	27	12
51.	9	21	12	9

Table 1. (continued) Shows the results of a hearing test given with the 4-A audiometer to the 148 elementary school pupils, grade 1 through 6 who had a hearing loss of nine or more sensation units in one or both ears.

Case Number	Test Number					
	1.		2.		3.	
	R/	L/	R/	L/	R/	L/
52.	27	24	24	24	21	21
53.	6	9	--	--	--	--
54.	18	3	12	3	--	--
55.	24	9	9	9	3	9
56.	6	30	3	24	-3	9
57.	3	30	3	24	6	21
58.	30	30	21	27	24	9
59.	9	12	15	18	6	21
60.	15	0	12	3	--	--
61.	24	24	24	24	0	18
62.	15	21	27	27	9	24
63.	24	3	9	3	--	--
64.	6	12	9	12	12	12
65.	15	15	15	15	18	-3
66.	30	21	30	21	27	21
67.	12	21	9	21	--	--
68.	12	3	12	3	--	--
69.	18	30	9	27	--	--
70.	18	15	15	9	--	--
71.	18	9	12	0	--	--
72.	12	15	12	15	--	--

Table I. (continued) Shows the results of a hearing test given with the 4-A audiometer to the 188 elementary school pupils, grades 1 through 6 who had a hearing loss of nine or more decibels in one or both ears.

Case Number	Test Number			
	1.	2.	3.	4.
52.	24	24	24	21
53.	8	--	--	--
54.	18	3	12	--
55.	24	9	9	9
56.	30	3	24	9
57.	30	3	24	21
58.	30	21	27	9
59.	9	12	18	21
60.	12	0	12	--
61.	24	24	24	18
62.	12	21	27	24
63.	24	3	3	--
64.	6	12	12	18
65.	12	12	12	18
66.	30	21	21	21
67.	12	21	3	--
68.	12	3	12	--
69.	18	30	27	--
70.	18	12	9	--
71.	18	9	0	--
72.	12	12	12	--

Table 1. (continued) Shows the results of a hearing test given with the 4-A audiometer to the 148 elementary school pupils, grade 1 through 6 who had a hearing loss of nine or more sensation units in one or both ears.

Case Number	Testing Number					
	1.		2.		3.	
	R/	L/	R/	L/	R/	L/
73.	30	15	18	12	6	9
74.	9	9	9	6	9	12
75.	9	18	12	12	12	12
76.	6	18	3	15	--	--
77.	30	3	30	0	27	-3
78.	18	18	-3	15	--	--
79.	0	27	-3	27	--	--
80.	27	6	15	3	21	3
81.	3	30	3	30	6	27
82.	27	18	30	18	24	18
83.	30	0	30	3	9	3
84.	27	0	30	0	--	--
85.	18	6	18	6	--	--
86.	-3	12	-3	15	3	15
87.	3	24	3	27	--	--
88.	21	3	12	0	27	-3
89.	3	24	12	18	-3	27
90.	0	9	3	9	--	--
91.	12	12	0	9	--	--
92.	3	12	3	9	--	--
93.	3	9	6	15	6	15

Table I. (continued) Shows the results of a hearing test given with the 4-A audiometer to the 148 elementary school pupils, grade 1 through 6 who had a hearing loss of nine or more sensation units in one or both ears.

Class Number	Tested Number			
	1.		2.	
	RA	LA	RA	LA
73.	30	15	18	15
74.	9	9	6	15
75.	9	18	15	15
76.	8	18	5	--
77.	30	3	30	27
78.	18	18	5	--
79.	0	27	27	--
80.	27	6	15	21
81.	3	30	3	27
82.	27	18	30	24
83.	30	0	30	3
84.	27	0	30	--
85.	18	6	18	--
86.	5	15	5	15
87.	3	24	3	--
88.	21	3	15	27
89.	3	24	15	27
90.	0	9	9	--
91.	15	15	9	--
92.	3	15	3	--
93.	3	9	5	15

Table 1. (continued) Shows the results of a hearing test given with the 4-A audiometer to the 148 elementary school pupils, grade 1 through 6 who had a hearing loss of nine or more sensation units in one or both ears.

Case Number	Testing Number					
	1.		2.		3.	
	R/	L/	R/	L/	R/	L/
94.	21	0	12	3	12	3
95.	6	15	15	15	3	9
96.	9	9	9	6	9	9
97.	15	18	6	9	9	9
98.	15	18	9	9	12	3
99.	6	12	6	12	--	--
100.	27	27	12	24	18	21
101.	9	12	12	12	--	--
102.	15	15	30	30	21	30
103.	12	21	27	24	6	12
104.	30	3	30	3	30	3
105.	15	15	15	18	15	9
106.	21	0	21	3	--	--
107.	27	3	27	3	--	--
108.	3	30	3	12	3	18
109.	12	3	9	3	9	3
110.	3	30	0	15	-3	18
111.	0	9	6	21	0	9
112.	15	3	12	3	15	-3
113.	9	12	9	9	--	--
114.	15	12	9	18	--	--

Table 1. (continued) Shows the results of a hearing test given with the 4-A audiometer to the 148 elementary school pupils, grade 1 through 6 who had a hearing loss of nine or more sensation units in one or both ears.

Case Number	1.		2.		Testing Number	
	Rf	Lf	Rf	Lf	Rf	Lf
94.	21	0	12	3	12	3
95.	8	12	12	12	3	3
96.	9	9	8	8	9	9
97.	18	18	8	9	9	9
98.	12	18	9	9	12	3
99.	8	12	8	12	--	--
100.	27	27	12	24	18	21
101.	9	12	12	12	--	--
102.	12	12	30	30	21	30
103.	12	21	27	24	8	12
104.	30	30	30	30	30	3
105.	12	12	12	18	12	9
106.	21	0	21	8	--	--
107.	27	2	27	3	--	--
108.	3	30	3	12	3	18
109.	12	3	9	3	9	3
110.	3	30	0	12	-3	18
111.	0	9	8	21	0	9
112.	12	3	12	3	12	-3
113.	9	12	9	9	--	--
114.	12	12	9	18	--	--

Table 1. (continued) Shows the results of a hearing test given with the 4-A audiometer to the 148 elementary school pupils, grade 1 through 6 who had a hearing loss of nine or more sensation units in one or both ears.

Case Number	Test Number					
	1.		2.		3.	
	R/	L/	R/	L/	R/	L/
115.	3	30	6	9	--	--
116.	30	6	30	3	18	6
117.	18	6	21	9	18	3
118.	6	21	3	12	3	9
119.	3	15	9	21	12	27
120.	9	12	9	12	--	--
121.	24	24	21	27	--	--
122.	27	12	21	9	--	--
123.	12	6	9	6	--	--
124.	18	15	21	15	12	15
125.	12	0	9	3	12	3
126.	12	9	15	12	--	--
127.	15	24	9	9	--	--
128.	3	18	0	24	3	9
129.	12	18	15	27	0	18
130.	12	6	9	6	12	6
131.	3	9	3	9	12	12
132.	30	15	0	18	--	--
133.	30	15	12	18	--	--
134.	6	18	-3	18	--	--
135.	3	21	21	15	--	--

Table 1. (continued) Shows the results of a hearing test given with the 4-1 audiometer to the 148 elementary school pupils, grade 1 through 6 who had a hearing loss of nine or more decibels in one or both ears.

Case Number	Test Number			
	1.	2.	3.	4.
115.	3	30	9	--
116.	30	9	30	18
117.	18	9	31	18
118.	8	21	3	3
119.	3	18	9	27
120.	9	18	9	--
121.	24	24	21	27
122.	27	18	21	9
123.	18	9	9	--
124.	18	18	21	18
125.	18	0	9	3
126.	18	9	18	--
127.	18	24	9	--
128.	3	18	0	3
129.	18	18	27	18
130.	18	9	9	18
131.	3	9	3	18
132.	30	18	0	--
133.	30	18	18	--
134.	9	18	-3	--
135.	3	21	21	--

Table 1. (continued) Shows the results of a hearing test given with the 4-A audiometer to the 148 elementary school pupils, grade 1 through 6 who had a hearing loss of nine or more sensation units in one or both ears.

Case Number	Test Number					
	1.		2.		3.	
	R/	L/	R/	L/	R/	L/
136.	3	27	3	21	-3	9
137.	3	15	15	24	3	9
138.	6	27	9	30	--	--
139.	3	15	0	18	--	--
140.	12	24	15	24	--	--
141.	18	6	9	3	12	0
142.	3	12	0	15	-3	15
143.	12	15	6	12	--	--
144.	15	3	15	3	15	0
145.	24	24	9	18	12	18
146.	21	6	30	9	24	6
147.	15	9	12	18	--	--
148.	21	6	9	9	12	3

Table 1 shows 97 children who had a hearing loss of 9 to 30 sensation units in one ear. 43 had a hearing loss of 9 to 30 sensation units in both ears. 8 had a hearing loss of 30 sensation units in one ear, and none had a hearing loss of 30 sensation units loss in both ears.

(2) Junior High School Tests

The Junior High school includes children from grades seven,

Table I. (continued) Shows the results of a hearing test given with the 4-A audiometer to the 148 elementary school pupils, Grade I through 6 who had a hearing loss of nine or more sensation units in one or both ears.

Case Number	Test Number			
	1.		2.	
	R	L	R	L
136.	3	27	3	21
137.	3	15	15	24
138.	6	27	9	30
139.	3	15	0	18
140.	12	24	15	24
141.	18	6	9	3
142.	3	12	0	15
143.	12	15	6	12
144.	15	3	15	3
145.	24	24	9	18
146.	21	6	30	9
147.	15	9	12	18
148.	21	6	9	9

Table I shows 97 children who had a hearing loss of 9 to 30 sensation units in one ear. 43 had a hearing loss of 9 to 30 sensation units in both ears. 8 had a hearing loss of 30 sensation units in one ear, and none had a hearing loss of 30 sensation units loss in both ears.

(3) Junior High School Tests

The Junior High School includes children from grades seven.

eight, and nine. The first test included 1,414 seventh grade children of which 300 were found to be defective in hearing. On the second test 293 were retested with 139 classified as defective, and of these 133 were given a final test and 62 were classified as hard of hearing.

Grades eight included 1,301 children who were tested with 275 found defective. 267 were retested with 119 classified as defective, and of these 116 were given a final test and 50 were classified as hard of hearing.

Grades nine included 1,218 children who were tested with 253 found defective. 249 were retested with 102 classified as defective, and of these 95 were given a final test and 44 were classified as hard of hearing.

Grades seven through nine or the Junior High school group included a total of 3,933 children tested with the 4-A audiometer with 156 classified as hard of hearing. Table 2 shows the results of these tests.

Table 2. Shows the results of a hearing test given with the 4-A audiometer to the 156 Junior High school pupils, grades seven through nine who had a hearing loss of nine or more sensation units in one ear or both ears.

Case Number	Test Number					
	1.		2.		3.	
	R/	L/	R/	L/	R/	L/
1.	3	30	3	24	-3	27
2.	6	12	3	12	-3	9
3.	30	3	30	3	21	-3

eight, and nine. The first test included 1,414 seventh grade children of which 300 were found to be defective in hearing. On the second test 293 were retested with 139 classified as defective, and of these 138 were given a final test and 82 were classified as hard of hearing.

Grades eight included 1,201 children who were tested with 275 found defective. 287 were retested with 119 classified as defective, and of these 118 were given a final test and 50 were classified as hard of hearing.

Grades nine included 1,218 children who were tested with 283 found defective. 249 were retested with 102 classified as defective, and of these 95 were given a final test and 44 were classified as hard of hearing.

Grades seven through nine of the Junior High school group included a total of 3,933 children tested with the 4-A audiometer with 155 classified as hard of hearing. Table 2 shows the results of these tests.

Table 2. Shows the results of a hearing test given with the 4-A audiometer to the 156 Junior High school pupils, grades seven through nine who had a hearing loss of nine or more sensation units in one or both ears.

Case Number	Test Number			
	1.	2.	3.	4.
1.	3	30	24	27
2.	6	12	12	9
3.	30	30	21	23

Table 2. (continued) Shows the results of a hearing test given with the 4-A audiometer to the 156 Junior High school pupils, grades seven through nine who had a hearing loss of nine or more sensation units in one ear or both ears.

Case Number	Test Number					
	1.		2.		3.	
	R/	L/	R/	L/	R/	L/
4.	15	3	18	3	24	3
5.	6	9	9	9	18	15
6.	3	24	3	24	-3	24
7.	21	9	21	6	15	6
8.	3	18	3	21	0	18
9.	18	15	15	12	12	12
10.	9	15	12	15	--	--
11.	6	15	6	12	--	--
12.	9	3	9	0	--	--
13.	0	9	3	9	--	--
14.	0	18	0	18	-3	21
15.	18	6	21	6	21	-3
16.	6	30	9	27	6	27
17.	21	6	21	15	18	6
18.	18	3	9	3	9	-3
19.	6	27	0	30	0	27
20.	30	3	30	3	21	9
21.	12	9	12	9	15	3
22.	3	9	0	9	--	--
23.	27	6	12	9	18	9
24.	12	9	24	9	18	3

Table 2. (continued) Shows the results of a hearing test given with the 4-A audiometer to the 156 Junior High School pupils, grades seven through nine who had a hearing loss of nine or more sensation units in one ear or both ears.

Case Number	Test Number			
	1.		2.	
	R	L	R	L
4.	15	3	18	24
5.	6	9	9	18
6.	3	24	3	24
7.	21	9	21	18
8.	3	18	3	0
9.	18	15	15	12
10.	9	15	12	--
11.	6	15	6	--
12.	9	3	9	--
13.	0	9	3	--
14.	0	18	0	21
15.	18	6	21	21
16.	6	30	9	27
17.	21	6	21	18
18.	18	3	9	9
19.	6	27	0	27
20.	30	3	30	21
21.	12	9	12	3
22.	3	9	0	--
23.	27	6	12	18
24.	12	9	24	18

Table 2. (continued) Shows the results of a hearing test given with the 4-A audiometer to the 156 Junior High school pupils, grades seven through nine who had a hearing loss of nine or more sensation units in one ear or both ears.

Case Number	Test Number					
	1.		2.		3.	
	R/	L/	R/	L/	R/	L/
25.	6	9	6	9	6	9
26.	15	0	9	3	9	3
27.	6	21	6	9	3	9
28.	18	12	6	15	--	--
29.	6	9	9	15	21	18
30.	0	21	3	24	3	27
31.	3	15	6	12	3	12
32.	8	15	15	12	12	12
33.	6	24	3	27	-3	24
34.	30	12	27	9	3	15
35.	15	12	12	9	--	--
36.	15	6	18	9	15	0
37.	3	18	3	9	6	27
38.	3	9	0	9	6	9
39.	6	9	6	9	--	--
40.	-3	30	3	30	--	--
41.	15	15	12	9	6	9
42.	6	9	6	9	30	12
43.	12	9	6	9	12	9
44.	3	18	9	9	6	12
45.	3	9	-3	9	9	9

Table 2. (continued) Shows the results of a hearing test given with the 4-A audiometer to the 188 Junior High School pupils, grades seven through nine who had a hearing loss of nine or more sensation units in one ear or both ears.

Case Number	Test Number					
	I.	I.	I.	I.	I.	I.
25.	8	8	9	8	8	9
26.	18	0	9	3	9	3
27.	6	21	6	9	3	9
28.	18	18	6	15	--	--
29.	6	9	9	15	21	18
30.	0	21	3	24	3	27
31.	3	15	8	15	3	13
32.	8	18	15	15	15	15
33.	8	24	3	27	-3	24
34.	30	18	27	9	3	18
35.	18	18	18	9	--	--
36.	18	6	18	9	15	0
37.	3	18	3	9	6	27
38.	3	9	0	9	8	9
39.	8	9	6	9	--	--
40.	-3	30	3	30	--	--
41.	15	15	18	9	8	9
42.	6	9	6	9	30	15
43.	18	9	6	9	15	9
44.	3	18	9	9	6	15
45.	3	9	-3	9	9	9

Table 2. (continued) Shows the results of a hearing test given with the 4-A audiometer to the 156 Junior High school pupils, grades seven through nine who had a hearing loss of nine or more sensation units in one ear or both ears.

Case Number	Test Number					
	1.		2.		3.	
	R/	L/	R/	L/	R/	L/
46.	15	6	21	0	21	-3
47.	15	6	24	-3	30	-3
48.	3	15	3	9	6	9
49.	0	18	-3	9	--	--
50.	0	9	0	12	--	--
51.	30	6	24	3	24	6
52.	6	21	6	18	-3	24
53.	12	9	9	9	6	9
54.	3	21	3	27	--	--
55.	6	12	9	15	6	15
56.	-3	30	-3	30	--	--
57.	6	9	-3	9	--	--
58.	6	12	0	9	--	--
59.	12	6	9	6	12	3
60.	30	9	30	12	24	27
61.	9	15	15	12	--	--
62.	9	9	0	9	6	9
63.	0	12	0	15	0	30
64.	6	9	6	9	3	9
65.	6	15	6	9	--	--
66.	21	0	18	3	--	--

Table 2. (continued) Shows the results of a hearing test given with the 4-A audiometer to the 156 Junior High School pupils, grades seven through nine who had a hearing loss of nine or more sensation units in one ear or both ears.

Case Number	Test Number			
	1.		2.	
	R	L	R	L
46.	15	8	21	0
47.	15	8	24	-2
48.	3	15	9	8
49.	0	18	-2	9
50.	0	9	0	12
51.	30	8	24	3
52.	8	21	8	18
53.	12	9	9	8
54.	2	21	27	--
55.	8	12	9	12
56.	-2	30	-2	20
57.	8	9	-2	9
58.	8	12	0	9
59.	12	8	9	12
60.	30	9	20	12
61.	9	15	18	--
62.	9	9	0	8
63.	0	12	0	15
64.	8	9	8	3
65.	8	12	8	--
66.	21	0	18	2

Table 2. (continued) Shows the results of a hearing test given with the 4-A audiometer to the 156 Junior High school pupils, grades seven through nine who had a hearing loss of nine or more sensation units in one ear or both ears.

Case Number	Test Number					
	1.		2.		3.	
	R/	L/	R/	L/	R/	L/
67.	-3	21	-3	27	-3	30
68.	12	3	9	0	9	6
69.	24	9	21	6	18	3
70.	12	12	12	9	15	15
71.	3	18	0	9	--	--
72.	9	9	9	9	--	--
73.	3	9	6	9	0	9
74.	12	0	12	3	9	6
75.	-3	12	3	9	3	9
76.	15	18	12	12	--	--
77.	12	12	15	15	--	--
78.	6	9	6	9	--	--
79.	9	18	3	24	-3	15
80.	30	30	30	24	30	30
81.	6	9	6	12	6	9
82.	9	15	9	9	3	9
83.	3	9	3	9	9	9
84.	30	9	30	15	30	9
85.	6	18	0	12	--	--
86.	9	15	12	12	21	18
87.	15	3	15	6	12	3

Table 2. (continued) Shows the results of a hearing test given with the 4-A audiometer to the 156 Junior High school pupils, grades seven through nine who had a hearing loss of nine or more sensation units in one ear or both ears.

Case Number	Test Number			
	I. R _L	I. L _R	II. R _L	II. L _R
67.	15	5	15	5
68.	9	15	15	21
69.	30	9	15	21
70.	30	9	15	15
71.	3	18	0	9
72.	9	9	9	9
73.	3	9	6	0
74.	12	0	12	9
75.	-3	12	3	3
76.	15	18	12	12
77.	12	12	15	12
78.	6	9	6	9
79.	9	18	3	-3
80.	30	30	24	30
81.	6	9	12	6
82.	9	15	9	3
83.	3	9	3	9
84.	30	9	15	30
85.	6	18	0	12
86.	9	15	12	21
87.	15	5	15	5

Table 2. (continued) Shows the results of a hearing test given with the 4-A audiometer to the 156 Junior High school pupils, grades seven through nine who had a hearing loss of nine or more sensation units, in one ear or both ears.

Case Number	Test Number					
	1.		2.		3.	
	R/	L/	R/	L/	R/	L/
88.	15	24	6	9	6	9
89.	30	24	24	9	18	15
90.	18	15	--	--	9	15
91.	18	15	18	15	12	12
92.	12	9	6	9	--	--
93.	3	12	3	9	3	9
94.	15	12	12	12	18	9
95.	21	24	15	9	24	21
96.	21	9	24	9	30	9
97.	15	15	9	9	9	9
98.	0	9	9	12	9	12
99.	3	12	3	15	9	15
100.	30	30	18	18	--	--
101.	6	9	0	12	-3	9
102.	9	9	9	9	9	6
103.	9	9	12	9	--	--
104.	27	3	30	9	30	3
105.	12	18	15	12	0	12
106.	9	9	9	9	9	6
107.	0	15	0	12	-3	15
108.	6	12	9	12	--	--

Table 2. (continued) Shows the results of a hearing test given with the audiometer to the 136 Junior High School pupils, grades seven through nine who had a hearing loss of nine or more decibels in one ear or both ears.

Case Number	Test Number			
	1.	2.	3.	4.
98.	15	24	9	9
99.	20	24	9	18
99.	18	18	--	9
91.	18	18	18	18
92.	18	9	9	--
93.	3	18	9	9
94.	18	18	18	18
95.	21	24	18	24
96.	21	9	9	20
97.	18	18	9	9
98.	0	9	18	9
98.	9	18	18	9
100.	30	30	18	--
101.	9	9	18	9
102.	9	9	9	9
103.	9	9	18	--
104.	27	3	20	30
105.	18	18	18	0
106.	9	9	9	9
107.	0	18	0	18
108.	9	18	9	--

Table 2. (continued) Shows the results of a hearing test given with the 4-A audiometer to the 156 Junior High school pupils, grades seven through nine who had a hearing loss of nine or more sensation units in one ear or both ears.

Case Number	Test Number					
	1.		2.		3.	
	R/	L/	R/	L/	R/	L/
109.	30	30	24	27	--	--
110.	9	9	9	9	6	9
111.	12	9	12	18	9	9
112.	9	12	0	12	6	9
113.	18	12	3	12	0	9
114.	-3	24	6	18	-3	9
115.	6	12	3	15	--	--
116.	6	12	6	18	0	9
117.	9	12	21	9	9	9
118.	0	12	0	18	0	15
119.	15	24	0	9	0	15
120.	0	30	-3	27	-3	18
121.	6	9	6	9	6	9
122.	0	9	0	9	-3	12
123.	9	9	12	9	6	15
124.	9	27	-3	9	-3	9
125.	9	15	3	15	6	12
126.	21	9	21	9	6	9
127.	0	9	3	9	-3	9
128.	15	6	12	6	9	0
129.	9	9	9	9	6	12

Table 2. (continued) Shows the results of a hearing test given with the 4-A audiometer to the 156 Junior High School pupils, grades seven through nine who had a hearing loss of nine or more sensation units in one or both ears.

Case Number	Test Number					
	1.		2.		3.	
	Rt	Lt	Rt	Lt	Rt	Lt
109.	30	30	24	27	--	--
110.	9	9	9	9	8	9
111.	12	9	12	18	9	9
112.	9	12	0	12	8	9
113.	18	12	3	12	0	9
114.	-3	24	8	18	-3	9
115.	8	12	3	12	--	--
116.	8	12	8	18	0	9
117.	9	12	21	9	9	9
118.	0	12	0	18	0	12
119.	12	24	0	9	0	12
120.	0	30	-3	27	-3	12
121.	8	9	8	9	8	9
122.	0	9	0	9	-3	12
123.	9	9	12	9	8	12
124.	9	27	-3	9	-3	9
125.	9	12	3	12	8	12
126.	21	9	21	9	8	9
127.	0	9	3	9	-3	9
128.	12	8	12	8	9	0
129.	9	9	9	9	8	12

Table 2. (continued) Shows the results of a hearing test given with the 4-A audiometer to the 156 Junior High school pupils, grades seven through nine who had a hearing loss of nine or more sensation units in one ear or both ears.

Case Number	Test Number					
	1.		2.		3.	
	R/	L/	R/	L/	R/	L/
130.	15	15	15	15	9	9
131.	12	9	12	9	0	9
132.	6	12	9	9	6	9
133.	12	21	15	15	15	15
134.	21	27	24	27	18	24
135.	15	3	15	6	9	6
136.	21	21	18	21	9	12
137.	9	12	9	12	9	6
138.	6	9	0	12	0	9
139.	3	9	0	9	-3	9
140.	0	12	6	15	0	9
141.	21	30	15	30	12	30
142.	18	9	15	9	21	15
143.	6	9	0	12	3	9
144.	-3	18	-3	18	0	24
145.	9	18	9	12	9	12
146.	6	9	6	9	6	9
147.	6	24	-3	21	-3	9
148.	12	3	21	12	21	3
149.	0	9	0	9	6	9
150.	6	12	9	12	6	9

Table 2. (continued) Shows the results of a hearing test given with the 4-A audiometer to the 155 Junior High School pupils. Grades seven through nine who had a hearing loss of nine or more decibels in one ear or both ears.

Case Number	Test Number			
	I. RA	I. LF	II. RA	II. LF
130.	6	12	9	12
131.	0	9	0	9
132.	6	12	9	12
133.	12	21	12	12
134.	21	27	24	27
135.	12	3	12	9
136.	21	21	12	21
137.	9	12	9	12
138.	6	9	0	12
139.	3	9	0	-3
140.	0	12	6	12
141.	21	30	12	30
142.	12	9	12	21
143.	6	9	0	12
144.	-3	12	-3	12
145.	9	12	9	12
146.	6	9	9	6
147.	6	24	-3	21
148.	12	3	21	12
149.	0	9	0	9
150.	6	12	9	12

Table 2. (continued) Shows the results of a hearing test given with the 4-A audiometer to the 156 Junior High school pupils, grades seven through nine who had a hearing loss of nine or more sensation units in one ear or both ears.

Case Number	Test Number					
	1.		2.		3.	
	R/	L/	R/	L/	R/	L/
151.	0	24	0	24	0	12
152.	21	3	12	3	12	3
153.	9	9	6	9	9	9
154.	12	3	9	9	9	3
155.	30	3	30	-3	30	3
156.	12	21	21	12	21	21

Table 2 shows 105 children who had a hearing loss of 9 to 30 sensation units in one ear. 39 had a hearing loss of 9 to 30 sensation units in both ears. 11 had a hearing loss of 30 sensation units in one ear and 1 had a hearing loss of 30 sensation units in both ears.

(3) High School Tests

The high school includes children from grades ten through twelve. The tenth grades included 1,260 children of which 259 were found defective. Of these 222 were retested with 92 classified as defective, and of these, 82 were given a final test and 40 were classified as hard of hearing.

Grades eleven included 1,097 children who were tested with 248 found defective. 215 were retested with 85 classified as defective, and of these, 76 were given a final test and 26 were

Table 2. (continued) Shows the results of a hearing test given with the A-A audiometer to the 135 Junior High School pupils, grades seven through nine who had a hearing loss of nine or more sensation units in one ear or both ears.

Case Number	Test Number			
	1.	2.	3.	4.
151.	0	24	0	12
152.	21	3	12	3
153.	9	9	6	9
154.	12	3	9	3
155.	30	3	30	3
156.	12	21	12	21

Table 2 shows 105 children who had a hearing loss of 9 to 30 sensation units in one ear. 39 had a hearing loss of 9 to 30 sensation units in both ears. 11 had a hearing loss of 30 sensation units in one ear and 1 had a hearing loss of 30 sensation units in both ears.

(3) High School Tests

The high school includes children from grades ten through twelve. The tenth grades included 1,260 children of whom 229 were found defective. Of these 222 were retested with 92 classified as defective, and of these, 82 were given a final test and 40 were classified as hard of hearing. Grades eleven included 1,097 children who were tested with 248 found defective. 218 were retested with 85 classified as defective, and of these, 76 were given a final test and 26 were

classified as hard of hearing.

Grades twelve included 981 children who were tested with 127 found defective. 118 were retested with 58 classified as defective and of these 41 were given a final test and 15 were classified as hard of hearing.

Grades ten through twelve or the high school group included a total of 3,338 children tested with the 4-A audiometer with 81 classified as hard of hearing. Table 3 shows the results of these tests.

Table 3. Shows the results of a hearing test given with the 4-A audiometer to the 81 high school pupils, grades ten through twelve who had a hearing loss of nine or more sensation units in one or both ears.

Case Number	Test Number					
	1.		2.		3.	
	R/	L/	R/	L/	R/	L/
1.	9	12	9	9	--	--
2.	9	12	15	9	--	--
3.	21	21	30	9	--	--
4.	6	9	3	9	--	--
5.	9	12	6	9	--	--
6.	0	12	6	9	--	--
7.	12	6	12	6	--	--
8.	3	30	6	30	--	--
9.	6	12	9	9	--	--
10.	30	15	30	9	--	--
11.	15	18	9	12	9	12
12.	6	30	0	27	3	18

classified as hard of hearing. Grades twelve included 981 children who were tested with 187 found defective. 118 were retested with 58 classified as defective and of these 41 were given a final test and 15 were classified as hard of hearing. Grades ten through twelve or the high school group included a total of 3,338 children tested with the 4-A audiometer with 81 classified as hard of hearing. Table 3 shows the results of these tests.

Table 3. Shows the results of a hearing test given with the 4-A audiometer to the 81 high school pupils, grades ten through twelve who had a hearing loss of nine or more sensation units in one or both ears.

Case Number	Test Number			
	1.	2.	3.	4.
1.	9	12	9	9
2.	9	12	15	9
3.	21	21	30	9
4.	8	9	3	9
5.	9	12	6	9
6.	0	12	6	9
7.	12	6	12	6
8.	3	30	6	30
9.	6	12	9	9
10.	30	12	30	9
11.	12	12	9	12
12.	8	30	0	27

Table 3. (continued) Shows the results of a hearing test given with the 4-A audiometer to the 81 high school pupils, grades ten through twelve who had a hearing loss of nine or more sensation units in one or both ears.

Case Number	Test Number					
	1.		2.		3.	
	R/	L/	R/	L/	R/	L/
13.	3	30	3	30	--	--
14.	24	18	6	9	--	--
15.	3	12	-3	9	--	--
16.	6	9	9	9	9	15
17.	9	18	12	12	9	6
18.	0	18	-3	9	-3	12
19.	15	21	30	21	21	18
20.	12	12	9	9	--	--
21.	12	12	9	12	--	--
22.	12	27	9	27	9	21
23.	3	24	0	24	0	15
24.	0	9	-3	12	--	--
25.	15	12	12	6	--	--
26.	6	12	9	18	0	9
27.	30	30	30	30	--	--
28.	21	15	15	0	15	6
29.	9	-3	12	-3	--	--
30.	0	9	-3	12	--	--
31.	3	15	3	18	3	12
32.	21	6	30	3	18	-3
33.	-3	9	0	9	0	9

Table 3. (continued) Shows the results of a hearing test given with the 4-A audiometer to the 81 high school pupils, grades ten through twelve who had a hearing loss of nine or more sections units in one or both ears.

Case Number	Test Number			
	1.	2.	3.	4.
13.	3	30	30	--
14.	24	18	9	--
15.	3	18	9	--
16.	6	9	9	18
17.	9	18	18	9
18.	0	18	--	18
19.	18	21	30	18
20.	18	18	9	--
21.	18	18	9	--
22.	18	27	9	21
23.	3	24	0	18
24.	0	9	--	--
25.	18	18	9	--
26.	6	18	18	9
27.	30	30	30	--
28.	21	18	0	18
29.	9	--	--	--
30.	0	9	--	--
31.	3	18	3	18
32.	21	6	30	--
33.	--	9	0	9

Table 3. (continued) Shows the results of a hearing test given with the 4-A audiometer to the 81 high school pupils, grades ten through twelve who had a hearing loss of nine or more sensation units in one or both ears.

Case Number	Test Number					
	1.		2.		3.	
	R/	L/	R/	L/	R/	L/
34.	-3	30	6	27	6	30
35.	3	18	6	12	0	12
36.	27	6	27	12	--	--
37.	3	9	6	9	-3	9
38.	0	15	3	12	--	--
39.	6	9	6	9	9	9
40.	3	9	6	12	0	9
41.	3	9	6	9	0	9
42.	-3	9	-3	12	-3	9
43.	6	12	9	12	--	--
44.	9	9	12	9	9	6
45.	-3	21	-3	12	--	--
46.	15	-3	21	-3	18	-3
47.	6	30	6	30	--	--
48.	15	9	--	--	--	--
49.	9	12	12	12	--	--
50.	6	9	9	9	6	9
51.	9	12	9	9	--	--
52.	9	15	9	9	--	--
53.	9	18	0	18	--	--
54.	27	3	30	3	24	3

Table 3. (continued) Shows the results of a hearing test given with the 4-A audiometer to the 81 high school pupils. Grades ten through twelve who had a hearing loss of nine or more decibels in one or both ears.

Case Number	Test Number			
	1.	2.	3.	4.
34.	2	20	3	24
35.	9	18	0	18
36.	9	18	0	18
37.	3	9	8	-3
38.	0	18	3	12
39.	8	8	9	9
40.	3	9	8	12
41.	3	9	8	0
42.	-3	9	-3	18
43.	8	12	9	12
44.	9	9	12	9
45.	-3	21	-3	12
46.	18	-3	21	-3
47.	8	20	8	20
48.	18	9	--	--
49.	9	18	12	12
50.	8	9	9	8
51.	9	12	9	--
52.	9	12	9	--
53.	9	18	0	18

Table 3. (continued) Shows the results of a hearing test given with the 4-A audiometer to the 81 high school pupils, grades ten through twelve who had a hearing loss of nine or more sensation units in one or both ears.

Case Number	Test Number					
	1.		2.		3.	
	R/	L/	R/	L/	R/	L/
55.	9	12	9	9	--	--
56.	0	9	6	9	--	--
57.	3	9	3	12	3	12
58.	0	9	6	12	--	--
59.	-3	18	-3	21	--	--
60.	3	24	12	24	--	--
61.	6	24	-3	27	--	--
62.	-3	12	-3	9	--	--
63.	24	-3	24	-3	24	-3
64.	-3	9	6	12	0	12
65.	18	21	12	12	9	9
66.	12	24	0	18	6	12
67.	6	12	9	9	-3	9
68.	0	15	21	9	--	--
69.	0	12	0	12	0	12
70.	3	9	3	9	6	9
71.	3	30	3	30	-3	30
72.	27	21	30	15	30	15
73.	3	15	3	9	-3	9
74.	12	12	9	18	12	15
75.	0	9	6	12	3	9

Table 3. (continued) Shows the results of a hearing test given with the 4-A audiometer to the 81 high school pupils, grades ten through twelve who had a hearing loss of nine or more decibels in one or both ears.

Case Number	Test Number			
	1.	2.	3.	4.
55.	9	12	9	9
56.	0	9	6	9
57.	3	9	3	12
58.	0	9	6	12
59.	-3	18	-3	21
60.	3	24	18	24
61.	6	24	-3	27
62.	-3	12	-3	9
63.	24	-3	24	-3
64.	-3	9	6	12
65.	18	21	12	12
66.	12	24	0	18
67.	6	12	9	-3
68.	0	12	21	9
69.	0	12	0	12
70.	3	9	3	6
71.	3	30	3	30
72.	27	21	30	20
73.	3	18	3	-3
74.	12	12	9	12
75.	0	9	6	12

Table 3. (continued) Shows the results of a hearing test given with the 4-A audiometer to the 81 high school pupils, grades ten through twelve who had a hearing loss of nine or more sensation units in one or both ears.

Case Number	Test Number					
	1.		2.		3.	
	R/	L/	R/	L/	R/	L/
76.	6	12	3	12	6	12
77.	-3	30	-3	30	-3	30
78.	12	6	12	12	12	9
79.	3	9	0	9	0	9
80.	12	24	0	18	6	12
81.	6	12	9	9	-3	9

Table 3 shows 50 children who had a hearing loss of 9 to 30 sensation units in one ear. 21 had a hearing loss of 9 to 30 sensation units in both ears. 9 had a hearing loss of 30 sensation units in one ear and 1 had a hearing loss of 30 sensation units in both ears.

(4) Ungraded School Test

The ungraded and continuation classes included 453 children who were given the first test with 94 classified as defective. Of the 89 who were retested 74 were classified as defective, and of the 70 who were given the final test 24 were classified as hard of hearing.

Table 4 shows the results of these tests.

Table 3. (continued) Shows the results of a hearing test given with the 4-A audiometer to the 81 high school pupils, grades ten through twelve who had a hearing loss of nine or more sensation units in one or both ears.

Case Number	Test Number			
	1.		2.	
	R _L	L _R	R _L	L _R
76.	8	12	3	12
77.	-3	30	-3	30
78.	12	8	12	12
79.	3	9	0	9
80.	12	24	0	18
81.	8	12	9	-3

Table 3 shows 50 children who had a hearing loss of 9 to 30 sensation units in one ear. 21 had a hearing loss of 9 to 30 sensation units in both ears. 9 had a hearing loss of 30 sensation units in one ear and 1 had a hearing loss of 30 sensation units in both ears.

(+) Ungraded School Test

The ungraded and continuation classes included 53 children who were given the first test with 84 classified as defective. Of the 89 who were retested 74 were classified as defective, and of the 70 who were given the final test 24 were classified as hard of hearing.

Table 4 shows the results of these tests.

Table 4. Shows the results of a hearing test given with the 4-A audiometer to the 24 ungraded and continuation school children who had a hearing loss of nine or more sensation units in one ear or both ears.

Case Number	Test Numbers					
	1.		2.		3.	
	R/	L/	R/	L/	R/	L/
1.	12	18	18	24	--	--
2.	-3	30	-3	30	--	--
3.	12	12	6	12	--	--
4.	27	30	--	--	--	--
5.	30	18	30	30	30	3
6.	18	9	9	9	21	30
7.	9	12	9	12	12	21
8.	9	6	9	6	--	--
9.	24	9	15	12	12	3
10.	15	6	15	9	12	3
11.	15	9	9	12	12	0
12.	18	12	18	6	21	-3
13.	9	9	15	9	--	--
14.	21	3	21	3	--	--
15.	30	30	0	12	9	9
16.	21	30	15	30	15	18
17.	30	9	9	3	15	3
18.	12	6	9	6	--	--
19.	-3	18	--	--	--	--
20.	9	6	9	3	--	--
21.	0	9	0	12	6	12
22.	0	9	0	9	--	--
23.	0	12	0	9	--	--
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Table 4. Shows the results of a hearing test given with the 4-A audiometer to the 24 ungraded and continuation school children who had a hearing loss of nine or more sensation units in one ear or both ears.

Case Number	Test Numbers			
	1.	2.	3.	4.
1.	18	18	18	24
2.	30	30	30	30
3.	18	18	18	18
4.	27	30	--	--
5.	30	18	30	30
6.	18	9	9	21
7.	9	18	9	18
8.	9	9	9	--
9.	24	9	18	18
10.	18	9	18	18
11.	18	9	18	18
12.	18	18	18	21
13.	9	9	18	--
14.	21	21	21	--
15.	30	30	0	9
16.	21	30	18	18
17.	30	9	9	18
18.	18	9	9	--
19.	18	--	--	--
20.	9	9	9	--
21.	0	9	0	18
22.	0	9	0	--
23.	0	18	0	--
24.	9	9	9	--

Table 4 shows that 15 of the children had a hearing loss of 9 to 30 sensation units in one ear. 5 had a hearing loss of 9 to 30 sensation units in both ears and 4 had a hearing loss of 30 sensation units in one ear.

Conclusions may be drawn that there are from three and one-half to about five per cent of our school children who are hard of hearing. What do we mean by hard of hearing? "All those who have defective hearing but have usable residual hearing," says Myers.¹ A child who is tested by the 4-A or 4-B audiometer and has a sensation loss of nine units or more in one or both ears is generally considered hard of hearing. These children are in need of service from a physician, preferably an otologist.

C. The Need for the Tests

Some recent studies have pointed out the need for diagnosis of the hard of hearing child. Mr. K. P. Royce of the Graybar Electric Company, distributors of the 4-A and 4-B audiometers, reported in an address before the Department of Lip-reading of the National Education Association that "studies made in a number of schools, including the public school systems of Rochester, New York, and Minneapolis, Minnesota, show that partially deafened children repeat about three and one-half times more than others."² In various cases, we find from one to one and one-half repetitions per deafened child. The variation depends on the

¹Myers, E. A., "Use of the Terms 'Hard of Hearing,' 'Deaf,' and 'Deafened,'" *Volta Review*, 1929, Vol. 31, pp. 481-482.

²Royce, K. P., "Finding the Hard of Hearing Child," p. 6.

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quality of teaching, curriculum and other local conditions."

Also "A recent study made of school children in Massachusetts showed 159 deafened children, 84 of whom had repeated from one to five times. The total was 156 years of retardation. The total cost of the repetitions was about \$9,300." "Now we can reasonably hope by medical treatment, lip-reading instruction, the use of hearing aids, and more favorable seating to cut the repetition by, at least, fifty per cent."

The hard of hearing child is not able to take in through the ears much that has to be learned through this sense. This means that often the child is misjudged by the teacher and labelled mediocre. This same child is handicapped in his speech, due to inability to hear distinctly. He tires easily, since he must strain constantly in order to hear. The hard of hearing child has difficulty in playing with others as he does not hear the directions quickly and lacks spontaneity in action.

The hard of hearing child is often misjudged by his parents, as they will think him not obedient when as a matter of fact he does not hear distinctly or perhaps not at all.

The child is apt to become morose, sullen, and lose his self-confidence and trust in himself. Perhaps the child does not even realize himself that he does not hear as well as others, as he has never heard any differently and has no earlier standard by which to go.

Criminologists have found "a high incidence of deafness in child criminals."¹

¹Hill, Ada Morgan, "Vocational Problems of the Hard of Hearing."

quality of teaching, curriculum and other local conditions." Also "A recent study made of school children in Massachusetts showed 159 deafened children, 84 of whom had repeated from one to five times. The total was 158 years of repetition. The total cost of the repetitions was about \$2,300." "Now we can reasonably hope by medical treatment, lip-reading instruction, the use of hearing aids, and more favorable seating to cut the repetition by, at least, fifty per cent."

The hard of hearing child is not able to take in through the ears much that has to be learned through this sense. This means that often the child is misjudged by the teacher and is called mediocre. This same child is handicapped in his speech due to inability to hear distinctly. He listens passively, since he must strain constantly in order to hear. The hard of hearing child has difficulty in playing with others as he does not hear the directions quickly and lacks spontaneity in action.

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Will, Ada Norman, "Vocational Problems of the Hard of Hearing."

D. Causes of Ear Trouble

Ear trouble is generally localized in the middle ear and most commonly referred to as otitis media. Causes leading to otitis media include (1) infected tonsils and adenoids; (2) infective conditions resulting from the common children's diseases, notably measles, scarlet fever, and diphtheria; and (3) chronic naso-pharyngeal catarrh. An infected naso-pharynx is found in about twenty per cent of the children in the schools and is the most common cause of otitis media. The infection in the naso-pharynx often spreads along the mucous membrane and infects the middle ear. Approximately two per cent of the school population have a chronic ear discharge.

The after-effects of children's diseases is a very serious matter and often causes ear trouble. Chronic naso-pharyngeal catarrh may lead definitely to otitis media.

Ignorance concerning care of the aural-respiratory tract may cause ear troubles in children. We are fast becoming aware of the great need of care of the children of pre-school age. The American Journal of School Hygiene, in September, 1920, in an article by Dr. J. E. Wallace-Wallin, reported that of 19,154 deaf and dumb who lost their hearing before the eighth year, 7,125 were less than twenty years of age, and that 7,541 were reported as congenital cases, while 9,253 became affected during the first four years of life. Parents and teachers must be aware of the dangers of the after effects of measles, scarlet fever, and other respiratory diseases of childhood.

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There are two types of impaired hearing. Nerve impairment in which the individual does not hear sounds of higher pitch and loses the sensation of hearing consonants. The other type, conductive deafness which causes an inability to follow a low pitch.

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"No. of towns and cities in which the audiometer was used--28.

No. of children tested--21,380.

No. of towns and cities having classes in lip-reading--21.

No. of children enrolled in lip-reading classes--1,451."

Just what are the signs or symptoms that the teacher should be observing? The following may serve as types to be watched and tested:

(1) A child who says "what" may be day-dreaming or he may not hear.

(2) A child who has a constantly running ear probably has difficulty in hearing.

(3) A child who usually breathes through his mouth may be suffering as a result of the cause of the mouth breathing.

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Part III

A. The Teacher's Part in the School Program in Meeting the Needs of the Hard of Hearing Child

First the teacher must be extremely alert to recognize cases of hard of hearing. If all the children are tested annually by the audiometer it is likely that the teacher will have to assume less responsibility in the detection of the hard of hearing child. On the other hand, we have so comparatively few schools using the audiometer test that we need the teacher's help in detecting the hard of hearing child. Mr. Philip Cashman, Supervisor of Special Schools and Classes, of the Massachusetts Department of Education, reports the following information regarding audiometer testing in 1937:

"No. of towns and cities testing ears with an audiometer--98.

No. of children tested--31,520.

No. of towns and cities having classes in lip-reading--21.

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- (4) A child who has to turn his head to one side or the other to hear.
- (5) A child who is inattentive and makes frequent mistakes in carrying out instructions.
- (6) A child who has a faulty articulation, often mispronouncing common words.
- (7) A child who habitually fails to respond when questioned. himself into the social group.
- (8) A child who wears a wearied expression. will not rise
- (9) A child who has frequent colds. lip-reading class.
- (10) A child who reports frequent earaches.
- (11) A child who tends to be seclusive. on the hard of hear
- (12) A child who carries his head to one side.
- (13) A child who constantly watches the teacher may be unconsciously reading the teacher's lips.
- (14) A child who speaks in a subdued voice may be hard of hearing and his own voice sounds loud to him. cannot
- (15) A child who does good written work but poor oral work. "Spotty" work may be a sign. to answer when spoken
- (16) A child who complains of a ringing or a noise in his head. hard of hearing person. thus embarrassing the

The teacher can help the hard of hearing child in the following ways:

- (1) By placing him in a front seat near the center of the room if he is hard of hearing in both ears, or near

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- (12) A child who carries his head to one side.
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- (1) By placing him in a front seat near the center of the room if he is hard of hearing in both ears, or near

the front on the right or left if he is deaf in the right or left ear, having the good ear nearer the teacher.

- (2) By speaking directly to the child who is hard of hearing.
- (3) By developing an understanding of the psychology of the deaf child.
- (4) By helping the child adjust himself to his difficulty and fit himself into the social group.
- (5) By planning the work so that the child will not miss important work if he goes to the lip-reading class.
- (6) By speaking clearly and distinctly.
- (7) By realizing the handicap placed upon the hard of hearing child.

All teachers of all children should understand the psychology of the hard of hearing.

Deafness is not at all like blindness. We pity a blind person because his affliction is so obvious. Since we cannot see that a person is hard of hearing we are apt to call him stupid because of his inattention or failure to answer when spoken to. The person with normal hearing feels embarrassed at having to shout to the hard of hearing person, thus embarrassing the hard of hearing person causing him to withdraw from the conversation. The individual who can not hear well is under constant strain trying to hear, causing nerve exhaustion and instability.¹

¹Wells, W. A., "You Call Them Deaf," Hygeia, January, 1937, pp. 8-11.

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Wells, W. A., "You Call Them Deaf," Hygiene, January, 1937, p. 12.

A tremendous feeling of depression comes with the beginning of deafness and it may exist indefinitely.¹ The first shock is the worst. One is aware of a strange loneliness, due to being isolated from the others in the world. Sound excites emotions and has much to do with how we feel from day to day. The hearing person does not realize this fact, because sight and sound are so interwoven for him that he does not discriminate what belongs to sight and what belongs to sound. Sound definitely creates a mood. Hence lack of sound leads to depression for a hard of hearing or a deaf person.

The deaf or hard of hearing person must develop a philosophy of life. It may be developed along some such line as to involve work, study, and play. We must help these persons to recognize the need of studying lip-reading and of finding work to do which will be within their power.

Many children who should study lip-reading dread to do so as they feel that they are being marked as being odd or different. Some children believe that they will not have a chance in the future to find a place in the occupational world, therefore teachers should be able to tell these children about occupations for which they will be suited.

B. "Selection of Pupils for Lip-reading Classes"

It is difficult to reach a decision concerning who should go into the lip-reading class. Each case must be considered separately since a slight loss may be a greater handicap to one pupil than a serious loss will be to another.

¹Berry, Gordon, M. D., "The Psychology of Progressive Deafness."

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Harry Gordon, M. D., "The Psychology of Progressive Deafness."

The following recommendations are general and given especially to help those who are inexperienced in the selection of pupils for lip-reading classes:¹

1. "A good basis for selection by the number of sensation units loss seems to be a minimum average of 12 or 15 S. U. in each ear, as 9 S. U. loss in the right ear and 21 S. U. loss in the left; or 12 S. U. in the right and 15 S. U. in the left; or 30 S. U. or more in one ear and normal hearing in the other, especially if the loss occurs early in school life or if there is a foreign language spoken at home.
2. All pupils, however slight their hearing loss, for whom the examining otologist gives a prognosis of progressive deafness, should be placed in the lip-reading classes.
3. Those for whom the prognosis is doubtful should be placed in the lip-reading class, pending final decision, especially if they are not making normal progress in their group.
4. Those who are not making normal progress with their group and for whom it is not possible to secure otological examination promptly may well be placed in the lip-reading class until diagnosis and prognosis have been made.
5. The placing of a pupil who has a decided hearing loss,

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5. The placing of a pupil who has a decided hearing loss,

¹ American Society for the Deaf, "Group Hearing Test."

but a good prognosis, may be determined by his school progress.

6. It should be kept in mind at all times that the earlier in his school life a hard of hearing pupil begins lip-reading, the less he feels the stigma of being "different" and the more willing he will be to continue the study in the higher grades. Further, the training he receives in alertness and concentration improves his work habits."

C. Intelligence of the Hard of Hearing

There is not, at present, any indication that the intelligence of the hard of hearing is inferior to the hearing person.¹

Dr. Madden reports a test whereby a group of hard of hearing children were matched with a group of normal children and given intelligence tests.² The groups chosen were both equal as to environment. The report shows that there is a very low correlation between the auditory loss and intelligence. "The child with the highest I. Q. in both groups was among the lowest fifth in hearing."³ The child with the poorest hearing had an I. Q. equal to the average of both groups. To know the amount of a child's auditory loss is of no value in predicting his intelligence. Since this relationship is so slight, no differentiations can be made between the hard of hearing and the normal in hearing on the basis of intelligence in determining school pro-

¹Madden, Richard, "The School Status of the Hard of Hearing," pp. 24-42.

²Ibid.

³Ibid.

but a good prognosis, may be determined by his school progress.

6. It should be kept in mind at all times that the earlier in his school life a hard of hearing pupil begins lip-reading, the less he feels the stigma of being "different" and the more willing he will be to continue the study in the higher grades. Further, the training he receives in alertness and concentration improves his work habits."

C. Intelligence of the Hard of Hearing

There is not, at present, any indication that the intelligence of the hard of hearing is inferior to the hearing person.¹ Dr. Madgen reports a test whereby a group of hard of hearing children were matched with a group of normal children and given intelligence tests.² The groups chosen were both equal as to environment. The report shows that there is a very low correlation between the auditory loss and intelligence. "The child with the highest I. Q. in both groups was among the lowest fifth in hearing."³ The child with the poorest hearing had an I. Q. equal to the average of both groups. To know the amount of a child's auditory loss is of no value in predicting his intelligence. Since this relationship is so slight, no differentiations can be made between the hard of hearing and the normal in hearing on the basis of intelligence in determining school progress.⁴ Madgen, Richard, "The School Status of the Hard of Hearing," pp. 24-25.

Child
Child

cedures." "The hard of hearing should be educated with the normal rather than with the deaf."¹ "The intelligence of the hard of hearing child is of the same quality as that of the normal child."²

D. Vocations for the Hard of Hearing

In choosing a vocation the advice of a vocational counselor should be sought. If this is not possible, the class room teacher should know these simple facts:

1. Every child who is hard of hearing and has sought medical advice and remedied his condition as much as possible, should learn lip-reading.
2. The child's natural aptitudes should be considered.³
3. Due consideration should be given his intelligence and his abilities.
4. The child should be informed of the trades and professions which do not require hearing acuity for success.
5. Deafness should not be looked upon as a handicap, especially if natural ability can be developed so as to offset the handicap.
6. Always point out the hard of hearing assets.
7. The child should be informed where he can go for help.
8. The child should be encouraged to use a hearing aid, if necessary.

¹Madden, Richard, "The School Status of the Hard of Hearing," pp. 24-42.

²Ibid.

³Hill, Ada Morgan, "Vocational Problems of the Hard of Hearing."

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Madge, Richard, "The School Status of the Hard of Hearing," pp. 24-32.

Child. Hill, Ada Morgan, "Vocational Problems of the Hard of Hearing," Inc.

The child who is hard of hearing must be made to understand that many individuals are handicapped by physical or mental irregularities. Everyone has both inherited and acquired abilities and should attempt to make use of his own special ability. The question to keep in mind, is whether or not a hearing loss is a handicap in the chosen occupation. Is the hearing loss of such a nature as to grow steadily worse or will it remain about the same?

A hard of hearing person must never bluff as nothing is more irritating to a person with normal hearing than a person who pretends to hear. The hard of hearing person must face the reality of deafness. He must try not to be irritable, depressive, sensitive, or allow himself to have a feeling of inferiority if he wishes to succeed in the business world.

If the vocation is chosen because there is an inner urge and a strong inclination, and one has ideals about one's work, the hard of hearing man who is adjusted to his needs and his opportunities will have as much chance of succeeding as will the person with normal hearing.

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Part IV

A. A Special Study of One Vocational Group

A hearing test was given to 426 college students who are training to become teachers. This test, which was given with the 4-A audiometer, was given to determine the number of individuals who are handicapped by being hard of hearing, and to attempt to determine the handicap which this defect would place upon the individual himself. Has the individual who is hard of hearing chosen the wrong vocation? Can he adjust himself to the situation and be successful in spite of the handicap?

Table 5 shows the results of the hearing tests given the 426 students, indicating that there were seven persons who failed to pass the test. In other words, after three trials, there were seven persons who had a hearing loss of nine or more sensation units in one or both ears.

In reading the table the left hand column indicates the section and the next column gives the result of the first test. Only those failing the first test were given a second test, as shown in section I, 2 failed the first test and 2 were given the second test with one failing, so one was tested a third time and failed, hence was classified as hard of hearing.

III	No. tested	28	No. tested	4	No. tested	1
	No. failed	4	No. failed	1	No. failed	1(1)
XIV	No. tested	30	No. tested	3	No. tested	1
	No. failed	3	No. failed	1	No. failed	1(1)
XV	No. tested	27	No. tested	4	No. tested	1
	No. failed	4	No. failed	1	No. failed	1(1)

426 fail want a score of nine or more sensation units in one or both ears.

(Classified as hard of hearing.)

Part IV

A. A Special Study of the Vocational Group

A hearing test was given to 428 college students who are training to become teachers. This test, which was given with the 4-A audiometer, was given to determine the number of individuals who are handicapped by being hard of hearing, and to attempt to determine the handicap which this defect would place upon the individual himself. Has the individual who is hard of hearing chosen the wrong vocation? Can he adjust himself to the situation and be successful in spite of the handicap?

Table 5 shows the results of the hearing tests given the 428 students, indicating that there were seven persons who failed to pass the test. In other words, after three trials, there were seven persons who had a hearing loss of nine or more sensation units in one or both ears.

In reading the table the left hand column indicates the section and the next column gives the result of the first test. Only those failing the first test were given a second test, as shown in section 1. 2 failed the first test and 2 were given the second test with one failing, so one was tested a third time and failed, hence was classified as hard of hearing.

Table 5. Shows results of a Hearing Test given with the 4-A audiometer to fifteen sections which included 426 college students.

Section	First Test		Second Test		Third Test	
I	No. Tested	18	No. tested	2	No. tested	1
	No. Failed	2*	No. failed	1	No. failed	1(1)
II	No. tested	23	No. tested	6	No. tested	1
	No. failed	6	No. failed	1	No. failed	0
III	No. tested	24	No. tested	1		
	No. failed	1	No. failed	0		
IV	No. tested	25	No. tested	3	No. tested	1
	No. failed	3	No. failed	1	No. failed	0
V	No. tested	21	No. tested	2	No. tested	1
	No. failed	2	No. failed	1	No. failed	1(1)
VI	No. tested	23	No. tested	3		
	No. failed	3	No. failed	0		
VII	No. tested	24	No. tested	3		
	No. failed	3	No. failed	0		
VIII	No. tested	32	No. tested	2	No. tested	1
	No. failed	2	No. failed	1	No. failed	1(1)
IX	No. tested	37	No. tested	1	No. tested	1
	No. failed	1	No. failed	1	No. failed	0
X	No. tested	41	No. tested	2		
	No. failed	2	No. failed	0		
XI	No. tested	46	No. tested	5		
	No. failed	5	No. failed	0		
XII	No. tested	27	No. tested	3	No. tested	1
	No. failed	3	No. failed	1	No. failed	1(1)
XIII	No. tested	28	No. tested	4	No. tested	1
	No. failed	4	No. failed	1	No. failed	1(1)
XIV	No. tested	30	No. tested	3	No. tested	1
	No. failed	3	No. failed	1	No. failed	1(1)
XV	No. tested	27	No. tested	4	No. tested	1
	No. failed	4	No. failed	1	No. failed	1(1)

*To fail means a score of nine or more sensation units in one or both ears.

(1) Classified as hard of hearing.

Table 5. Shows results of a Hearing Test given with the 4-A audiometer to fifteen sections which included 422 college students.

Section	First Test	Second Test	Third Test
I	No. Tested 18 No. Failed 22	No. Tested 8 No. Failed 1	No. Tested 1 No. Failed 1 (1)
II	No. Tested 23 No. Failed 8	No. Tested 8 No. Failed 1	No. Tested 1 No. Failed 0
III	No. Tested 24 No. Failed 1	No. Tested 1 No. Failed 0	
IV	No. Tested 25 No. Failed 3	No. Tested 5 No. Failed 1	No. Tested 1 No. Failed 0
V	No. Tested 21 No. Failed 2	No. Tested 2 No. Failed 1	No. Tested 1 No. Failed 1 (1)
VI	No. Tested 23 No. Failed 3	No. Tested 3 No. Failed 0	
VII	No. Tested 24 No. Failed 3	No. Tested 3 No. Failed 0	
VIII	No. Tested 32 No. Failed 2	No. Tested 2 No. Failed 1	No. Tested 1 No. Failed 1 (1)
IX	No. Tested 37 No. Failed 1	No. Tested 1 No. Failed 1	No. Tested 1 No. Failed 0
X	No. Tested 41 No. Failed 2	No. Tested 2 No. Failed 0	
XI	No. Tested 46 No. Failed 5	No. Tested 5 No. Failed 0	
XII	No. Tested 27 No. Failed 3	No. Tested 3 No. Failed 1	No. Tested 1 No. Failed 1 (1)
XIII	No. Tested 28 No. Failed 4	No. Tested 4 No. Failed 1	No. Tested 1 No. Failed 1 (1)
XIV	No. Tested 30 No. Failed 3	No. Tested 3 No. Failed 1	No. Tested 1 No. Failed 1 (1)
XV	No. Tested 27 No. Failed 4	No. Tested 4 No. Failed 1	No. Tested 1 No. Failed 1 (1)

(1) Classified as hard of hearing.
Who fail means a score of nine or more sensation units in one or both ears.

The papers were then sorted according to classes and Figure 1 shows the results of the tests given the 77 seniors. Figure 2 shows the results of the 112 Juniors. Figure 3 shows the results of the 117 Sophomores. Figure 4 shows the results of the 120 Freshmen.

FIGURE 1. SHOWS THE RESULTS OF A HEARING TEST GIVEN WITH THE 4-A AUDIOMETER TO 77 COLLEGE SENIORS.

<u>No. of persons</u>	<u>Score Hearing Loss</u>
34	-3 both ears
22	-3 one ear-- 0 other ear
7	0 both ears
1	-3 one ear-- 3 other ear
3	3 one ear-- 0 other ear
1	3 both ears
2	6 one ear-- 0 other ear
2	6 one ear-- 3 other ear
2	6 both ears
1	-3 one ear-- 12 other ear
1	-3 one ear-- 15 other ear
<u>1</u>	-3 one ear-- over 30 other ear
Total 77	

In reading figures 1, 2, 3, 4, and 5 the first column indicates the number of students and the second column indicates the score. There were 34 persons who had a score of -3 in both ears. -3 means superior hearing and 0 means normal hearing and a hearing loss of 3 to 6 is not considered serious. A hearing

The papers were then sorted according to classes and Figure 1 shows the results of the tests given the VV seniors. Figure 2 shows the results of the tests given the VV juniors. Figure 3 shows the results of the tests given the VV sophomores. Figure 4 shows the results of the tests given the VV freshmen.

FIGURE 1. SHOWS THE RESULTS OF A HEARING TEST GIVEN WITH THE A-A AUDIOMETER TO VV SENIORS.	
No. of persons	Score hearing loss
34	-3 both ears
22	-3 one ear-- 0 other ear
7	0 both ears
1	-3 one ear-- 3 other ear
3	3 one ear-- 0 other ear
1	3 both ears
2	6 one ear-- 0 other ear
2	3 one ear-- 3 other ear
2	6 both ears
1	-3 one ear-- 12 other ear
1	-3 one ear-- 15 other ear
1	-3 one ear-- over 30 other ear
Total 77	

In reading figures 1, 2, 3, 4, and 5 the first column indicates the number of students and the second column indicates the score. There were 34 persons who had a score of -3 in both ears. -3 means superior hearing and 0 means normal hearing and a hearing loss of 3 to 6 is not considered serious. A hearing

loss of 9 or more sensation units in one or both ears is considered serious, and the individual is considered as hard of hearing. Thus we find three in this group who are classified as hard of hearing.

FIGURE 2. SHOWS THE RESULTS OF A HEARING TEST GIVEN WITH THE 4-A AUDIOMETER TO 112 COLLEGE JUNIORS.

<u>No. of persons</u>	<u>Score Hearing Loss</u>
58	-3 both ears
26	-3 one ear-- 0 other ear
10	0 both ears
1	-3 one ear-- 3 other ear
5	3 one ear-- 0 other ear
2	3 both ears
2	6 one ear-- -3 other ear
3	6 one ear-- 0 other ear
4	6 one ear-- 3 other ear
<u>1</u>	-3 one ear-- 9 other ear
Total 112	

loss of 9 or more sensation units in one or both ears is considered serious, and the individual is considered as hard of hearing. Thus we find three in this group who are classified as hard of hearing.

FIGURE 2. SHOWS THE RESULTS OF A HEARING TEST GIVEN WITH THE 4-A AUDIOMETER TO 112 COLLEGE JUNIORS.

No. of persons	Score Hearing Loss
58	-5 both ears
26	-3 one ear-- 0 other ear
10	0 both ears
1	-3 one ear-- 3 other ear
5	3 one ear-- 0 other ear
2	3 both ears
2	6 one ear-- -5 other ear
3	6 one ear-- 0 other ear
4	6 one ear-- 3 other ear
1	-3 one ear-- 9 other ear
Total 112	

FIGURE 3. SHOWS THE RESULTS OF A HEARING TEST GIVEN WITH THE 4-A AUDIOMETER TO 117 COLLEGE SOPHOMORES.

<u>No. of persons</u>	<u>Score Hearing Loss</u>
55	-3 both ears
21	-3 one ear-- 0 other ear
13	0 both ears
6	-3 one ear-- 3 other ear
9	3 one ear-- 0 other ear
2	3 both ears
2	6 one ear-- -3 other ear
2	6 one ear-- 0 other ear
4	6 one ear-- 3 other ear
Total 120	6 both ears
1	-3 one ear-- 21 other ear
<u>1</u>	-3 one ear-- more than 30 other ear
Total 117	

Figure 3 shows the results of the 117 students, classified to show the number who had no hearing loss and the number who had normal hearing, and the number who had some hearing loss indicating the score of the amount of loss.

FIGURE 3. SHOWS THE RESULTS OF A HEARING TEST
GIVEN WITH THE 4-A AUDIOMETER TO 114 COLLEGE
SOPHOMORES.

No. of persons	Score Hearing Loss
25	-3 both ears
21	-3 one ear-- 0 other ear
13	0 both ears
6	-3 one ear-- 3 other ear
3	3 one ear-- 6 other ear
2	3 both ears
2	6 one ear-- 3 other ear
2	6 one ear-- 0 other ear
4	6 one ear-- 3 other ear
1	6 both ears
1	-3 one ear-- 21 other ear
1	-3 one ear-- more than 30 other ear
Total 114	

FIGURE 4. SHOWS THE RESULTS OF A HEARING TEST GIVEN WITH THE 4-A AUDIOMETER TO 120 COLLEGE FRESHMEN.

<u>No. of persons</u>	<u>Score Hearing Loss</u>
58	-3 both ears
29	-3 one ear-- 0 other ear
9	0 both ears
8	-3 one ear-- 3 other ear
7	3 one ear-- 0 other ear
2	6 one ear-- -3 other ear
4	6 one ear-- 0 other ear
2	6 both ears
<u>1</u>	6 one ear-- 12 other ear
Total 120	

Figure 5 shows the results of the 426 students, classified to show the number who had no hearing loss and the number who had normal hearing, and the number who had some hearing loss indicating the score or the amount of loss.

FIGURE 4. SHOWS THE RESULTS OF A HEARING TEST
GIVEN WITH THE 4-A AUDIOMETER TO 120 COLLEGE
FRESHMEN.

No. of persons	Score Hearing Loss
58	-3 both ears
29	-3 one ear-- 0 other ear
9	0 both ears
8	-3 one ear-- 3 other ear
7	3 one ear-- 0 other ear
2	6 one ear-- -3 other ear
4	6 one ear-- 0 other ear
2	6 both ears
1	6 one ear-- 12 other ear
Total 120	

Figure 5 shows the results of the 426 students, classified to show the number who had no hearing loss and the number who had normal hearing, and the number who had some hearing loss in-
dicating the score or the amount of loss.

FIGURE 5. SHOWS THE RESULTS OF A HEARING TEST GIVEN ON THE 4-A AUDIOMETER TO 426 COLLEGE STUDENTS IN 1938.

<u>No. of persons</u>	<u>Score of Hearing Loss</u>
205	-3 both ears
98	-3 one ear-- 0 other ear
39	0 both ears
16	-3 one ear-- 3 other ear
24	3 one ear-- 0 other ear
5	3 both ears
6	6 one ear-- -3 other ear
11	6 one ear-- 0 other ear
10	6 one ear-- 3 other ear
5	6 both ears
1	-3 one ear-- 9 other ear
1	-3 one ear-- 12 other ear
1	-3 one ear-- 15 other ear
1	6 one ear-- 12 other ear
1	-3 one ear-- 21 other ear
2	-3 one ear-- over 30 other ear
Total 426	

To summarize there were 5 individuals who had a hearing loss of 9 to 30 sensation units in one ear, and 2 individuals who had a sensation unit loss of more than 30 in one ear.

These seven individuals are the ones with whom we are concerned. Figure 6 shows the results of the hearing test given to these seven individuals.

This is used in the same manner as the tables.

FIGURE 5. SHOWS THE RESULTS OF A HEARING TEST
GIVEN ON THE 4-A AUDIOMETER TO 425 COLLEGE
STUDENTS IN 1938.

No. of persons	Score of hearing loss
205	-5 both ears
98	-5 one ear--0 other ear
39	0 both ears
16	-5 one ear--5 other ear
24	5 one ear--0 other ear
5	5 both ears
6	5 one ear--5 other ear
11	5 one ear--0 other ear
10	5 one ear--5 other ear
5	5 both ears
1	-5 one ear--9 other ear
1	-5 one ear--15 other ear
1	-5 one ear--15 other ear
1	5 one ear--15 other ear
1	-5 one ear--21 other ear
2	-5 one ear--over 30 other ear
Total 425	

To summarize there were 5 individuals who had a hearing loss of 9 to 30 sensation units in one ear, and 2 individuals who had a sensation unit loss of more than 30 in one ear. These seven individuals are the ones with whom we are concerned. Figure 5 shows the results of the hearing test given to these seven individuals.

This is used in the same manner as the tables.

FIGURE 6. SHOWS THE RESULTS OF A HEARING TEST GIVEN WITH THE 4-A AUDIOMETER TO THE 7 COLLEGE STUDENTS WHO HAD A HEARING LOSS OF NINE OR MORE SENSATION UNITS IN ONE OR BOTH EARS.

Case Number	Test Number					
	1.		2.		3.	
	R/	L/	R/	L/	R/	L/
1.	-3	30	-3	30	-3	30
2.	15	-3	15	-3	15	-3
3.	-3	15	-3	12	-3	12
4.	21	-3	24	-3	24	-3
5.	over 30	-3	over 30	-3	over 30	-3
6.	9	-3	15	0	9	-3
7.	9	-3	9	-3	9	-3

The third and final test determined the status of the individuals.

B. Case Studies and Observations

In order to learn more about the seven persons who were classified as hard of hearing, individual conferences were held. The following is the information obtained at this time, together with remarks on the cases.

Case I. Right ear -3. Left ear over 30 sensation unit losses.

This student reports that when she was young she was unable to hear in her left ear over the telephone. One day, quite by accident she used the telephone receiver in her right hand and found she could hear in the right ear, which led her family to believe there must be something wrong with the left ear.

At about the age of eleven she was taken to the Massachu-

FIGURE 8. SHOWS THE RESULTS OF A HEARING TEST GIVEN WITH THE 4-A AUDIOMETER TO THE 7 COLLEGE STUDENTS WHO HAD A HEARING LOSS OF NINE OR MORE SENSATION UNITS IN ONE OR BOTH EARS.

Case Number	Test Number			
	1.	2.	3.	4.
1.	30	30	30	30
2.	15	15	15	15
3.	15	15	15	15
4.	21	24	24	24
5.	30 over	30 over	30 over	30 over
6.	9	15	0	9
7.	9	9	9	9

The third and final test determined the status of the in-

dividuals.

E. Case Studies and Observations

In order to learn more about the seven persons who were classified as hard of hearing, individual conferences were held. The following is the information obtained at this time, together with remarks on the cases.

Case 1. Right ear - 5. Left ear over 30 sensation unit losses.

This student reports that when she was young she was unable to hear in her left ear over the telephone. One day, quite by accident she used the telephone receiver in her right hand and found she could hear in the right ear, which led her family to believe there must be something wrong with the left ear.

At about the age of eleven she was taken to the Massachusetts

setts General Hospital and advised to have her tonsils removed. Between the age of eleven and sixteen she made several trips to the hospital for very intensive studies of her hearing and at the age of sixteen her tonsils were removed. There was no improvement in the hearing after the tonsillectomy.

The following conclusions were drawn at this time. Either she had been born with no ear drum in the left ear or as a result of some one of the so-called children's diseases the drum had been destroyed.

Later she was told by another physician that there was no opening in the ear. This caused her mother to tell her that at the time of her birth there had been an injury to the left side of the face. The doctor thought that this might have caused the defect. As far as they were able to determine at the time, she heard nothing in the left ear and the case was considered irremedial.

With the compensation of excellent hearing in the right ear the girl experiences no difficulty in being able to hear.

Remarks on the Case. Whenever the student was tested by the whisper method she told that she could not hear at all in the left ear. Her physical record card indicates that she has an irremedial condition. She seems to have the right attitude toward the fact that she has the defect and is practicing correct mental hygiene.

Case II. Right ear 15 sensation unit loss. Left ear -3.

The hearing test revealed a hearing loss in the right

sees General Hospital and advised to have her tonsils removed. Between the age of eleven and sixteen she made several trips to the hospital for very intensive studies of her hearing and at the age of sixteen her tonsils were removed. There was no improvement in the hearing after the tonsillectomy.

The following conclusions were drawn at this time. Either she had been born with no ear drum in the left ear or as a result of some one of the so-called children's diseases the drum had been destroyed.

Later she was told by another physician that there was no opening in the ear. This caused her mother to tell her that at the time of her birth there had been an injury to the left side of the face. The doctor thought that this might have caused the defect. As far as they were able to determine at the time, she heard nothing in the left ear and the case was considered irremedial.

With the compensation of excellent hearing in the right ear the girl experiences no difficulty in being able to hear. Remarks on the Case. Whenever the student was tested by the whisper method she told that she could not hear at all in the left ear. Her physical record card indicates that she has an irremedial condition. She seems to have the right attitude toward the fact that she has the defect and is practicing correct mental hygiene.

Case II. Right ear is sensation unit loss. Left ear - 5. The hearing test revealed a hearing loss in the right

ear. The student did not realize that there was anything wrong with her hearing and promised to go to a physician for a check-up.

Remarks on the Case. The student was very grateful to learn that there was some difficulty and recalls having had to have wax removed from the right ear, a few years ago. Promises to check on the trouble. The doctor now reports that the condition will probably not get any worse and is undoubtedly the result of measles. She promises to keep careful check on the right ear.

Case III. Right ear -3. Left ear 12 sensation units loss.

This student showed a hearing loss of 12 sensation units in her left ear. She reports having catarrh and also feels "queer sensations" in this ear. Promises to go to a physician and report the findings.

Remarks on the Case. This student reports that she has gone to a physician who has found that the loss of hearing is probably due to a catarrhal condition which is being treated at this time.

Case IV. Right ear 24 sensation unit loss. Left ear -3.

This student shows a hearing loss of 24 sensation units in her right ear. She passed the whisper test. She reports having had a swelling in the ear at the close of school in 1936 and upon reporting to the doctor was told she was developing a mastoid. Constant treatment throughout the summer avoid-

ear. The student did not realize that there was anything wrong with her hearing and promised to go to a physician for a check-

up.

Remarks on the Case. The student was very grateful to learn that there was some difficulty and recalls having had to have wax removed from the right ear, a few years ago. Promises to check on the trouble. The doctor now reports that the condition will probably not get any worse and is undoubtedly the result of measles. She promises to keep careful check on the right ear.

Case III. Right ear - 3. Left ear 12 sensation units loss. This student showed a hearing loss of 12 sensation units in her left ear. She reports having catarrh and also feels "queer sensations" in this ear. Promises to go to a physician and report the findings.

Remarks on the Case. This student reports that she has gone to a physician who has found that the loss of hearing is probably due to a catarrhal condition which is being treated at this time.

Case IV. Right ear 24 sensation units loss. Left ear - 3. This student shows a hearing loss of 24 sensation units in her right ear. She passed the whisper test. She reports having had a swelling in the ear at the close of school in 1935 and upon reporting to the doctor was told she was developing a mastoid. Constant treatment throughout the summer avoided

ed an operation and the case was pronounced cured in September, 1936, but she was told she would never hear normally in that ear as the "cells were dead."

Remarks on the Case. The student was retested with the whisper test and passed which shows that the whisper test did not show the hearing loss in this case. The doctor told her the ear would probably never get any worse.

Case V. Right ear more than 30 sensation unit loss. Left ear -3.

This student has a sensation unit loss of more than 30 in her right ear. She had scarlet fever when three years of age and was treated at the Massachusetts Eye and Ear Infirmary. The doctor told her mother that the ear drum had been punctured and that there was no help for her. With unusually keen hearing in her other ear she says that she does not notice the loss of hearing in one ear.

Remarks on the Case. The physical record card of this student shows no defect in the ears. The usual whisper test was given probably rather badly and the student heard each time with the good ear. She says that she can hear, apparently perfectly, but admits usually sitting so that her "good ear" will be nearer her companions. She thinks it is very clever to allow no one to know that she hears nothing in the right ear. She has not developed the right attitude toward the defect and is consequently very bad in practicing mental hygiene.

Case VI. Right ear 9 sensation unit loss. Left ear -3.

ed an operation and the case was pronounced cured in September, 1935, but she was told she would never hear normally in that ear as the "cells were dead."

Remarks on the Case. The student was tested with the whisper test and passed which shows that the whisper test did not show the hearing loss in this case. The doctor told her the ear would probably never get any worse.

Case V. Right ear more than 30 sensation unit loss. Left ear - 5.
This student has a sensation unit loss of more than 30

in her right ear. She had scarlet fever when three years of age and was treated at the Massachusetts Eye and Ear Infirmary. The doctor told her mother that the ear drum had been punctured and that there was no help for her. With unusually keen hearing in her other ear she says that she does not notice the loss of hearing in one ear.

Remarks on the Case. The physical record card of this student shows no defect in the ears. The usual whisper test was given probably rather badly and the student heard each time with the good ear. She says that she can hear, apparently perfectly, but admits hesitantly stating so that her "good ear" will be near her companions. She thinks it is very clever to allow no one to know that she hears nothing in the right ear. She has not developed the right attitude toward the defect and is consequently very bad in practicing mental hygiene.

Case VI. Right ear 9 sensation unit loss. Left ear - 3.

This student knew that there was trouble with the ear. He was employed, this past summer mixing cement and some cement got in his ear. He reported to the doctor for treatment and was under the impression that his ear was all right now. He promised to check again with the doctor.

Remarks on the Case. This student was aware of the fact there had been trouble with his ear and he had taken care of it as much as seemed advisable at the time. He should recheck with the doctor as there is obviously some difficulty with that ear. At present he is assuming the attitude that he is deaf and there is nothing that can be done about it. He probably should go to an otologist.

Case VII. Right ear 9 sensation unit loss. Left ear -3.

This student knew that he could not hear normally with his right ear. He says that the trouble is the result of measles. He does not know whether or not the trouble is remedial.

Remarks on the Case. This student needs further guidance and promises to attend to the matter, this summer. He intends to find out whether or not the ear will respond to treatment. If no treatment is necessary at the present time, is there any chance of the condition growing worse or will the hearing loss remain about the same?

Of the four-hundred and twenty-six students who were tested the first time, three hundred and eighty-two passed. This means

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Case VII. Right ear 9 sensation with loss. Left ear - 8.

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121.

Remarks on the Case. This student needs further guidance and promises to attend to the matter, this summer. He intends to find out whether or not the ear will respond to treatment. If no treatment is necessary at the present time, is there any chance of the condition growing worse or will the hearing loss remain about the same?

Of the four-hundred and twenty-six students who were tested the first time, three hundred and eighty-two passed. This means

that none of these people had a hearing loss of nine or more sensation units in one or both ears.

It was necessary to give a second test to the forty-four who did not pass. There were various reasons why these people did not pass the first time, and the reasons may not have had anything to do with their hearing. A badly adjusted ear phone may have been the cause, or a noise which may have distracted the individual or perhaps he was nervous. A slight congestion caused by a cold may have been the cause of his not passing the test. On the second test given these forty-four people, ten failed to pass. On the third test three of these ten passed, leaving seven who are classified as hard of hearing.

Five of these persons have a hearing loss of less than thirty sensation units in one ear. This means that they are easily compensating for the hearing loss by hearing normally in the other ear and since the loss is not very severe they have never realized any difficulty and also have been able to pass the whisper or watch test, which had previously been given with the result that they did not know that there was any trouble. Two of the cases report wax in the ear which is causing the trouble. They are now aware that after this condition is treated there may be a reoccurrence which will cause loss of hearing; consequently these persons will keep a close check on their hearing ability.

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ing loss of 24 sensation units in one ear, due to scarlet fever, can not do anything at present, but she must try to avoid trouble with her other ear.

The individual who has always been deaf in one ear, has faced the fact; she has tried to have medical aid and has a good mental attitude toward the defect. The other individual who is deaf in one ear has never until this test, actually faced the fact. She has rather glorified the idea that no one has discovered the condition. It would seem to be rather poor mental hygiene to fail to face the fact that this is a defect, which, though it need not be aided at the present, will perhaps in time have to be compensated for by lip-reading or a mechanical device. Sometimes it may be most embarrassing not to be able to hear in both ears and it would be best for the individual to realize that it is not a disgrace but merely a fact which must be met squarely and when necessary acted upon. It is questionable whether or not it is advisable for her to become a teacher. At the present time, with normal hearing in one ear she hears adequately, but if anything should happen to the good ear, she would be tremendously handicapped in teaching and would probably have to resign.

Teacher to use lip-reading in all his classes, thus becoming more proficient through practice.

5. Proper mental hygiene concerning the problem of hearing should be carefully taught to the children with a hearing loss.

6. Before choosing a vocation, the individual should know

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Part V

A. Conclusions

1. Testing methods which employ the watch or the whisper test are inadequate.
2. The 4-A audiometer is the best type of hearing test for schools to employ.
3. Since there are from three and one-half to five per cent of our children in school who are hard of hearing it is necessary to test by an audiometer to determine those needing medical treatment and lip-reading.
4. Lip-reading classes are a necessary part of the school program.
5. There must be close correlation between the home and the school to properly encourage the hard of hearing child.
6. Careful diagnosis should be made of the children in the Junior high school, since it is here that a variation of programs exists, and great confusion or failure may be the result of hard of hearing.
7. If the child enters a lip-reading class, he must be encouraged by his regular teachers as well as his lip-reading teacher to use lip-reading in all his classes, thus becoming more proficient through practice.
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9. Before choosing a vocation, the individual should know

whether or not he has any hearing loss, and if he has a severe loss he should enter some vocation where normal hearing is not absolutely essential.

B. Recommendations

1. Teachers should encourage confidence and build a proper attitude on the part of the child toward a loss of hearing.
2. Teachers should stimulate all possible effort toward the right kind of adjustments and accomplishments.
3. Teachers should help the children with normal hearing to understand the difficulties of the hard of hearing child and contribute generously of their help and sympathy.
4. Teachers should impress the hard of hearing child with the necessity for continued treatment as long as there is promise of relief.
5. Children who will profit by it should be encouraged to study lip-reading.
6. Teachers should cooperate, not only with the home, but should do their utmost to cooperate with the lip-reading teacher.

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